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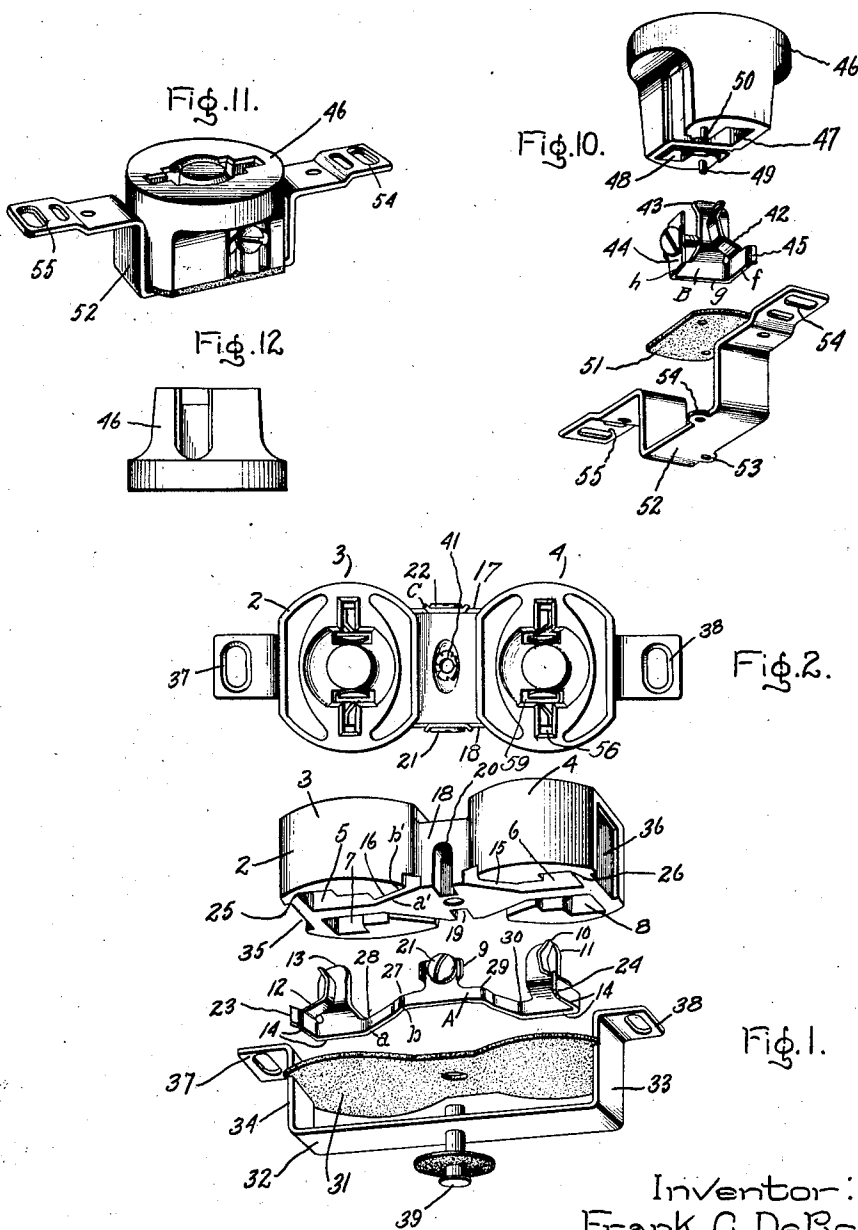
F. C. DE REAMER

1,786,292

ELECTRIC SOCKET

Filed July 18, 1927

2 Sheets-Sheet 1



Inventor:
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2 Sheets-Sheet 2

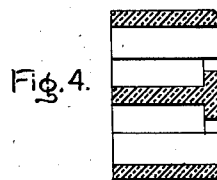
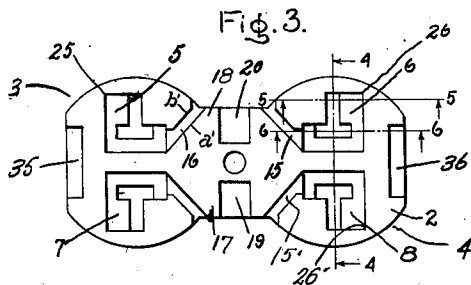
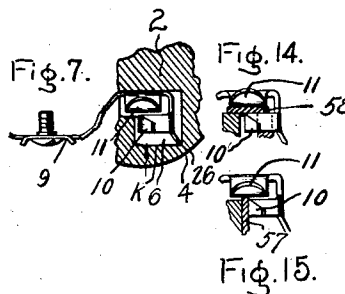
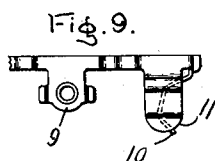
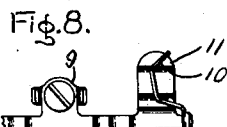
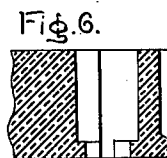
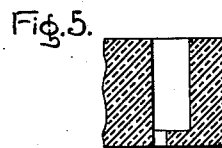
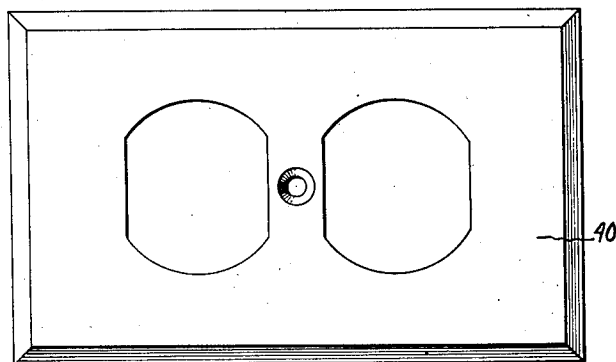


Fig. 13.



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UNITED STATES PATENT OFFICE

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ELECTRIC SOCKET

Application filed July 18, 1927. Serial No. 206,458.

My invention relates to an electric socket. More particularly it relates to a form of socket especially adapted for use as a well convenience outlet for receiving one or more
5 plugs such as are ordinarily attached to vacuum cleaners, electric fans, Christmas tree lights, and the like. More particularly, the device is of the type designed to receive plug terminals of more than one design, for
10 example. The invention relates to the type of convenience outlet for receiving, for example, a plug, the axial planes of the terminals of which lie non-coincident but parallel to each other, or for receiving a plug, the
15 axial planes of the terminals of which are coincident.

My invention will be more readily understood by reference to the accompanying drawing in which Fig. 1 is a so-called exploded view of one form of the device with
20 the elements in perspective and viewed from the rear; in this figure only one of the terminal spring members is shown immediately above the housing of insulating material, such
25 as porcelain, which latter is the lowermost element in the figure; Fig. 2 is a top view of the same form of the device with all of the elements assembled; Fig. 3 is a top view of the insulating body, Fig. 1; Fig. 4 is a section
30 on line 4—4 of Fig. 3; Fig. 5 is a section on line 5—5 of Fig. 3; Fig. 6 is a section on line 6—6 of Fig. 3; Fig. 7 is a top view of a portion of one of the springs of the device such as
35 the spring shown in Fig. 1 and a section of a portion of the housing taken below the front face of the housing; Fig. 8 is a side view of the element of Fig. 7 viewed in the direction
40 of the arrow of Fig. 7; Fig. 9 is a side view of the same element viewed in the opposite direction to that indicated by the arrow in Fig. 7; Fig. 10 is an exploded view in perspective
45 of a single terminal form of the device as seen from the rear; Fig. 11 is a perspective view of the same form of the device in Fig. 10
50 and 15 show two different plugs in engage-

ment with the spring contacts of the device.

Referring more in detail to the drawings, it will be seen that the device comprises a body element or housing 2, Fig. 1, of any suitable insulating material such as porcelain.
55 This housing in the form shown in Figs. 1 and 3 has the general outline of a figure 8. Each of the wings 3 and 4 of the device is provided with two cavities, for example, the right wing 4 is provided with the cavities
60 6 and 8 and the left wing 3 with the cavities 5 and 7. Associated with each housing there are two terminal spring elements each a duplicate of the spring element A, Fig. 1. The
65 spring A is formed with a terminal 9 in the center for receiving a wire connection. Each end of the spring is formed with flexible prongs for making suitable engagement with the plug terminal. For example, referring
70 to Fig. 1, the right hand terminal of the element A is provided with the spring elements 10 and 11, while the left hand terminal is provided with corresponding spring elements 12 and 13. It will be seen that the
75 springs 11 and 13 lie in the same general plane whereas the springs 10 and 12 lie in planes at right angles thereto. It will also be seen that the body of the spring which connects the central, right and left terminal
80 elements consists of a metal conductor in the general form of the letter W. The housing 2 and the spring A are properly shaped to fit each other. The design is such that the
85 springs 10 and 11 project into the cavity 6, and the springs 12 and 13 project into the cavity 5, while the body portion 14 of the spring lies across the rear face of the housing 2 along the grooves 15 and 16. The terminal
90 portion 9 extends along the side 18 of the housing. It will be observed that along the side 18 and also along the opposite side 17 respectively grooves 20 and 19 are provided within which the ends of the binding
95 screws 21 and 22 project, the screw 21 being located on the terminal of the spring A and the screw 22 on the terminal of the duplicate spring C. It will be seen, therefore, that the spring A is normally on edge, whereas heretofore in devices of this sort the body portion
100 has rested flat on the porcelain housing.

This spring is in the form of a plate which is provided with a terminal 9 at or about the middle portion. The plate is bent on either side of the central portion so that the terminal 9 may be located outside the housing 2. Furthermore, on either side of the central portion the plate is formed to fit into the corresponding grooves and cavities in the housing edgewise. The portion of the plate which is inserted in each cavity is folded for example into a three-sided structure. Referring to Fig. 7, the structure that is inserted in the cavity 6 has three sides *c*, *d* and *e*, two of which are located in cavity 6 and one in groove 15. In Fig. 10 the corresponding sides are the sides *f*, *g* and *h*. The housing, Fig. 7, is provided with three sides such as the sides *j*, *i* and *k*. The terminal region 24 of the side *c* is turned outward and fits in the corner 26 at the juncture of sides *i* and *k*. Therefore, the spring is held snugly in its cavity with its sides *c* and *d* extending along the sides *i* and *j*. The advantage of this construction is that inasmuch as the metal plate is edgewise, much less material is required than when the plate is flat, as in the old style of construction. The economy in construction results from the fact that terminal elements, such as the terminals 10 and 11, project laterally. This also has the advantage that the contact elements 10 and 11 do not have to be bent at sharp angles. When the metal is bent at sharp angles the heating causes the spring to lose resiliency and poor contact is made between the terminals and the plug elements, which results in an increased rate of deterioration. This type of construction, therefore, insures in addition a longer life for the device. Special attention is directed to the bent portions 23 and 24. The function of these bent portions is to insure a snug fit of the spring in the housing as indicated in Fig. 7. For this purpose the ends of the portions 23 and 24 of the spring A are seated in the corners 25 and 26 respectively of the housing. Special attention is also directed to the offset construction of the spring element A between the points 27 and 28 on one side and 29 and 30 on the opposite side, Fig. 1. The function of this construction is to insure a tight fit between the spring A and the housing. For example, the portion *a* is designed to strike against the inner wall *a'* of the housing, while the portion *b* is designed to strike against the wall portion *b'* of the housing. Therefore, it will be seen that inasmuch as the ends of the spring 23 and 24 snugly fit into the corners 25 and 26, a stability of construction is insured, which is not to be found in any of the devices of this general character in the prior art.

It will be understood that the formation of that portion of the spring between the points 27 and 28 is duplicated on the oppo-

site side between the points 29 and 30. As described the contacts 10 and 11 of the spring A fit in the cavity 6 while the terminals 12 and 13 fit in the cavity 5. The duplicate spring C is provided with contacts corresponding to the contacts 10 and 11 which are located in the cavity 8 and it is also provided with contacts corresponding to contacts 12 and 13 which are located in the cavity 7.

After the springs are assembled in the housing as above described a fiber cover 31 is placed over the back of the housing. This plate 31 is then clamped in position by means of a metal strip 32, the legs 33 and 34 of which slip over the ends 35 and 36 of the housing. It will be observed that the terminal portions 37 and 38 of this strip are provided with openings for the purpose of securing the device into a cavity in the wall, for example, as is customary. In order to lock the strap in position I use a pin 39 which extends through the housing and is riveted on the opposite side as shown in Fig. 2. This pin is provided with two shoulders; the upper shoulder rivets tightly against the strip 32 and the lower shoulder holds loosely an insulation washer part. The cavity in the wall that receives the device is covered by a metal plate such as the metal plate 40 shown in Fig. 13. This metal plate is held in position by a suitable screw, which latter is screwed into the rivet element 39, the latter being provided with threads at the end 41, Fig. 2. This arrangement insures the grounding of the plate 40 to the strip 32 to prevent anyone being shocked as the result of defective insulation.

Referring to the single type of outlet shown in Figs. 10 and 11, this outlet is in the form of a single socket arrangement. The device is provided with a pair of spring elements B which are provided with laterally projecting members 42 and 43 corresponding to the elements 10 and 11 in Fig. 1. The spring B is also provided with offset elements 44 and 45 which perform functions similar to the elements 23 and *a* and *b* of Fig. 1, that is, they insure that the spring shall fit snugly in the cavity thereby permanently fixing the positions of the prongs 42 and 43 so as to make proper contact with the plug member. The housing 46 of the single type of outlet is substantially cylindrical in formation, being provided with suitable cavities 47 and 48 for receiving the spring elements B, two of which elements being provided with the outlet. It will be observed that a couple of pins 49 and 50 are provided on the base of the housing. These pins project through a fiber plate 51 which is placed over the back of the housing and serves to function similarly to that of the plate 31, Fig. 1. This plate 51 is clamped in position by the metal strap element 52 which is also provided with perforations 53 and 54 through which the

pins 49 and 50 project by insuring against relative movement in the form of rotation between the strap 52 and the housing 46. The strap element 52, of course, serves the same function as the strap element 32 and is provided with suitable perforations as indicated in the terminal sections 54 and 55 for securing the device to the wall and for preventing its rotation.

It will be evident from the description and construction of the device of the invention that when one form of plug is used, one of the plug prongs 57 is inserted through the guide opening 56, Fig. 2, and forced between the contact portion 10, Fig. 15, and the wall of the housing and with the other form of plug one of the plug prongs 58 is inserted through the guide opening 59 and forced between the contact portion 11, Fig. 15, and the wall of the housing.

It will be seen, therefore, that I provide a novel construction in connection with convenient outlet devices which may be cheaply constructed and which possesses the feature of stability of the metal contact elements. The type of construction described insures against any play between the spring element and the housing, thereby insuring reliable contact between the plug and the socket.

While I have shown and described my invention in connection with a specific form of device in order that the invention may be clearly understood I do not wish to be limited to this specific construction inasmuch as in view of the disclosure, variations for accomplishing the same result will readily suggest themselves which do not depart from the spirit of the invention or the scope of the claims contained herein.

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

1. In a socket a conducting plate folded into the general form of the letter W with the ends of the outer limbs turned out, the two lower heels of the folded plate being flattened, the central section of the folded plate being bent to form a flattened portion offset with respect to the other flattened portions and a contact spring projecting laterally with respect to the plate from each of said lower heels and an insulating body formed and slotted to receive the folded plate sideways, and a pair of cavities in said body, one opposite each of said springs, each spring projecting into its corresponding cavity, and openings in said body, one leading to each of said cavities whereby connections may be established with said springs by means of a plug element, the mid portion of said plate being located on the outside of said body and having a terminal for a wire connection thereto.

2. An article of manufacture for a socket in the form of a conducting plate folded into the general form of the letter W with the

ends of the outer limbs turned out, the two lower heels of the folded plate being flattened, the central section of the folded plate being bent to form a flattened portion offset with respect to the other flattened portions and a contact spring projecting laterally with respect to the plate from each of said lower heels.

3. In a socket, a conducting plate folded into the general form of the letter W with the ends of the outer limbs turned out, the two lower heels of the folded plate being flattened, the central section of the folded plate being bent to form a flattened portion offset with respect to the other flattened portions and a contact spring projecting laterally with respect to the plate from each of said lower heels, an insulating body formed and slotted to receive the folded plate sideways, a pair of cavities in said body, one opposite each of said springs, each spring projecting into its corresponding cavity, and openings in said body, one leading to each of said cavities whereby connections may be established with said springs by means of a plug element.

4. An article of manufacture for a socket in the form of a conducting plate folded into the general form of the letter W with the ends of the outer limbs turned out, the two lower heels of the folded plate being flattened, and a contact spring projecting laterally with respect to the plate from each of said lower heels.

5. In a socket, a housing of insulating material, said housing having a cavity behind the front face thereof with three walls, one of said walls being located between and in a direction transverse the other two and all extending parallel to the axis of the socket, a metal strip with a contact section thereof located in said cavity and folded along two different lines parallel to said axis, the portion of the said folded section in said cavity lying between said lines being placed with one face thereof along one of said walls and the end of said strip being seated at the junction of the other two of said walls in said cavity.

6. In a socket, a housing of insulating material, said housing having a cavity behind the front face thereof with three walls, one of said walls being located between and in a direction transverse the other two and all extending parallel to the axis of the socket, a metal strip with a contact section thereof located in said cavity and folded along two different lines parallel to said axis, the portion of the said folded section in said cavity lying between said lines being placed with one face thereof along one of said walls and the end of said strip being seated at the junction of the other two of said walls in said cavity, a prong projecting from the portion of said section located between said

lines and forming a contact element for the socket, said contact element extending toward the said face of the housing, and means for directing a plug through said face to make contact with the said contact elements
5 in said cavity.

7. In a socket, a housing of insulating material, said housing having a cavity behind the front face thereof with three walls, one
10 of said walls being located between and in a direction transverse the other two and all extending parallel to the axis of the socket, a metal strip with a contact section thereof located in said cavity and folded along two
15 different lines parallel to said axis, the portion of the said folded section in said cavity lying between said lines being placed with one face thereof along one of said walls and the end of said strip being seated at the
20 junction of the other two of said walls in said cavity, a prong projecting from the portion of said section located between said lines and forming a contact element for the socket, the portion of the strip adjoining said
25 end being bent about a third line parallel to said axis to prevent said last portion from engaging one of said walls, and a second prong projecting from said last portion of said strip adjoining said end and forming
30 another contact element, both of said contact elements extending toward the said face of the housing, and means for directing a plug to make contact with either of said contact elements in said cavity.

35 8. In a socket, a housing of insulating material, said housing having a cavity behind the front face thereof with three walls, one of said walls being located between and in a direction transverse the other two and all
40 extending parallel to the axis of the socket, a metal strip with a contact section thereof located in said cavity and folded along two different lines parallel to said axis, the portion of the said folded section in said cavity
45 lying between said lines being placed with one face thereof along one of said walls and the end of said strip being seated at the junction of the other two of said walls in said cavity, said housing being provided
50 with a second cavity constructed similarly to the first, a second section of said strip located along the other half of the latter and being similarly formed and similarly located in said cavity, contact springs projecting
55 from said metal strip in each of said cavities, and means whereby a plug may be inserted in either of said cavities through said face and contact made with either of said springs in their respective cavities.

60 In witness whereof, I have hereunto set my hand this fourteenth day of July, 1927.

FRANK C. DE REAMER.