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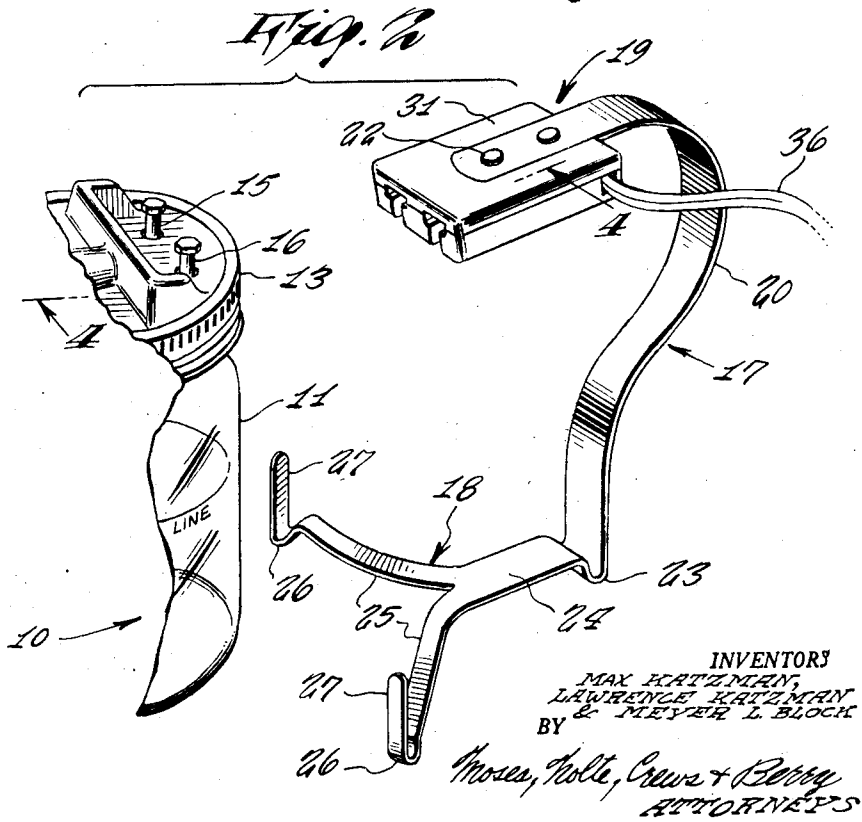
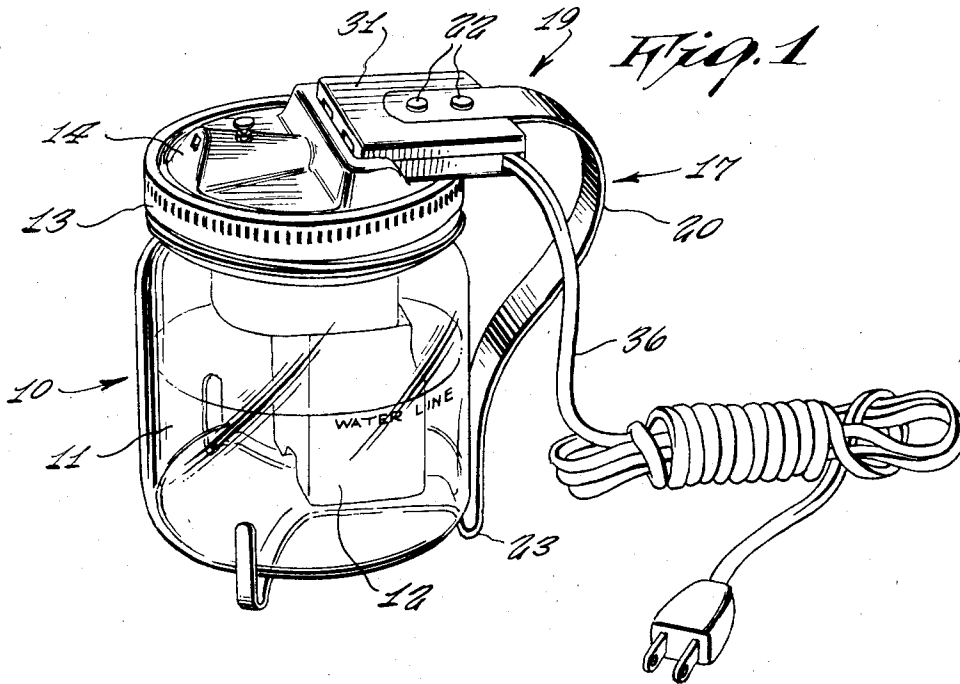
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VAPORIZER CARRIER AND STAND

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3 Sheets-Sheet 1



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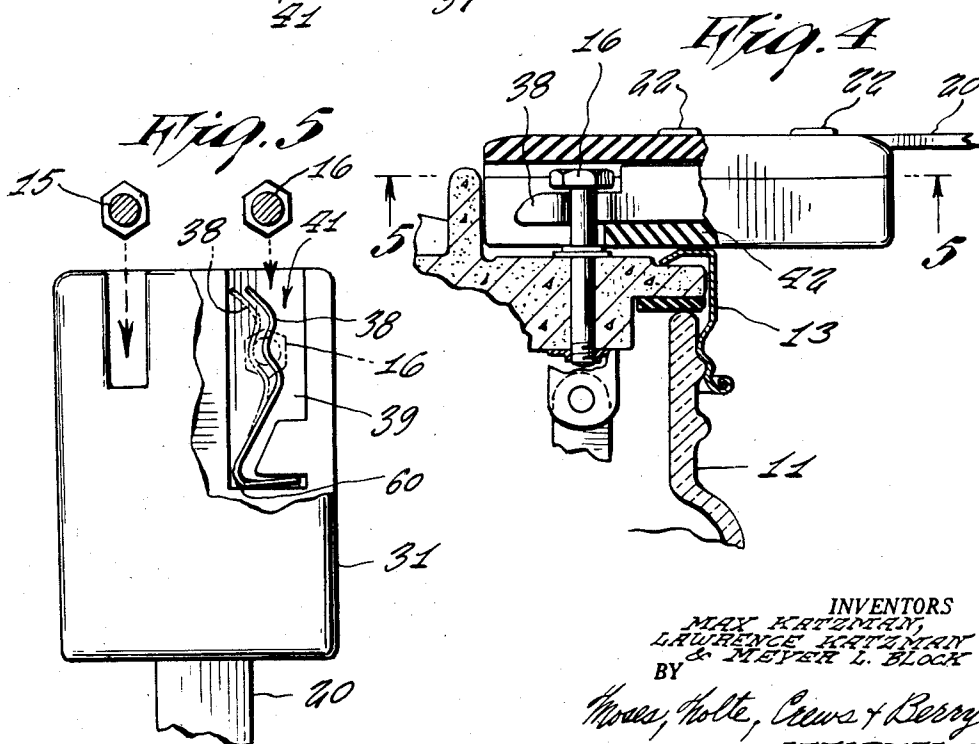
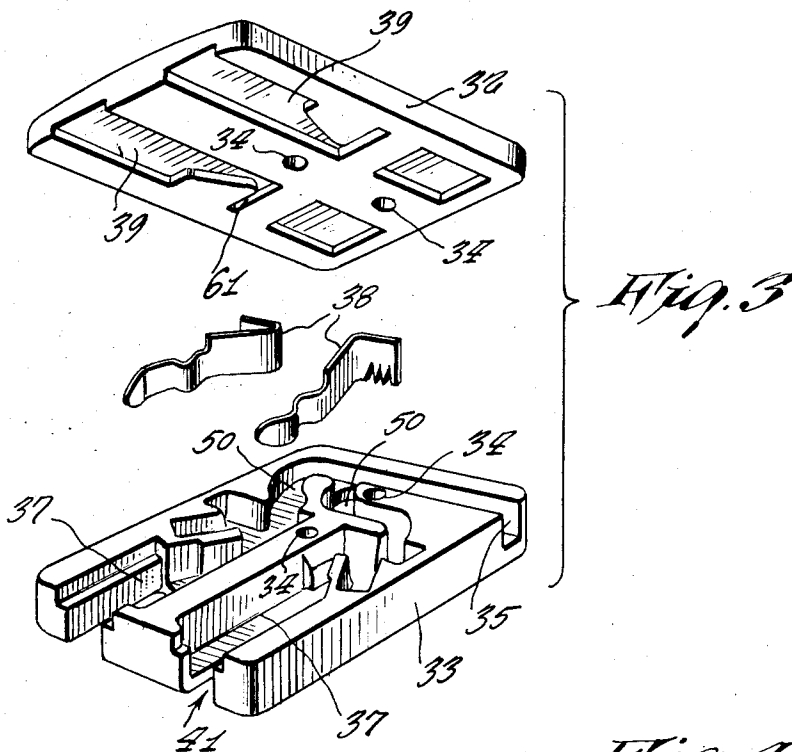
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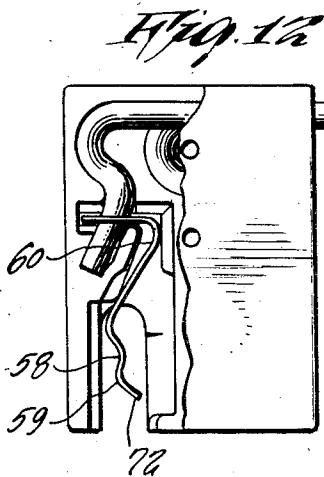
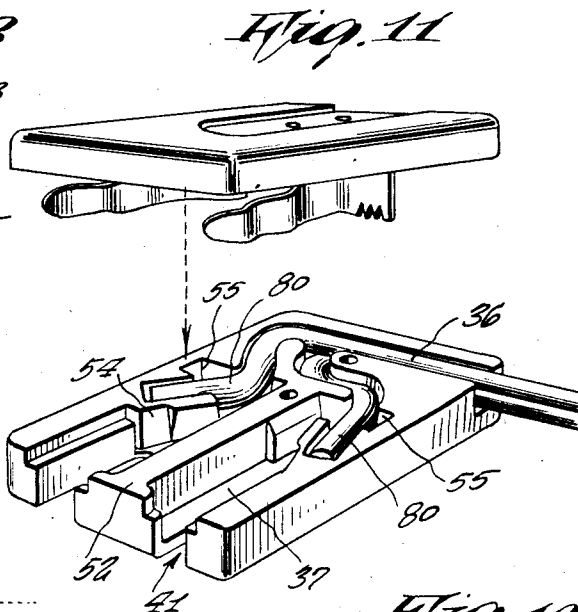
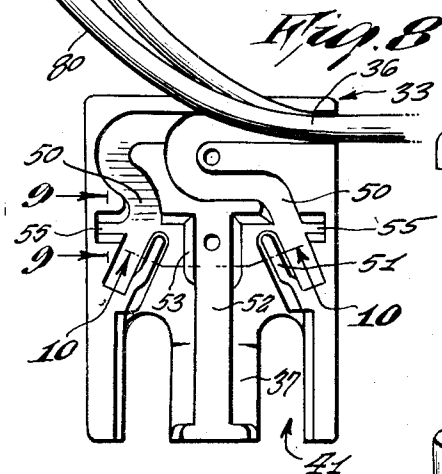
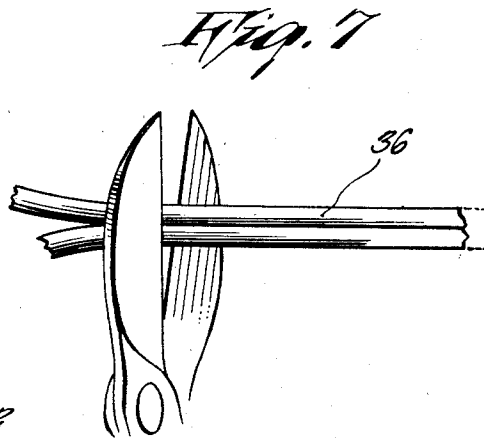
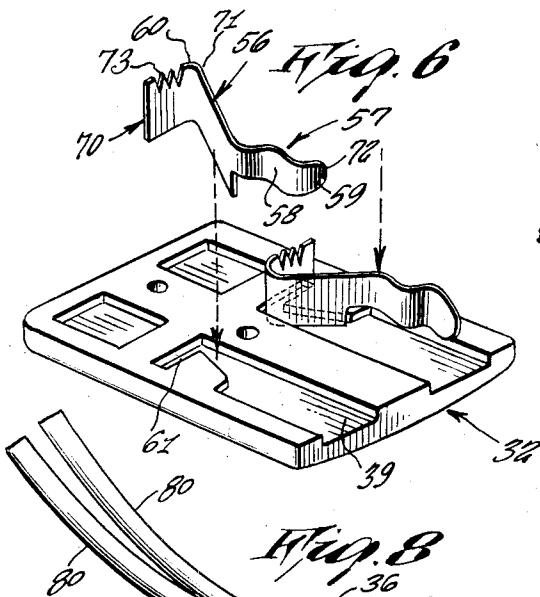
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3 Sheets-Sheet 3



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1

2,886,793

VAPORIZER CARRIER AND STAND

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7 Claims. (Cl. 339—58)

This invention relates to carriers for vaporizers and has for one of its objects to provide a combination electric plug and vaporizer carrier.

Another object of this invention is to provide a combined carrier, stand and female plug for a vaporizer.

Still another object is to provide a novel female electrical plug.

A further object of the present invention is to provide a female electric plug which is adapted to engage vertically extending terminals of a vaporizer.

It is a further object of the present invention to provide a combination electric plug and carrier for a vaporizer which avoids the necessity of providing a separate electric line to supply current to the heating elements of the vaporizer.

A further object of the present invention is to provide a vaporizer carrier, stand and plug combination which protects the vaporizer from breakage and protects the user from shock.

It is also an object to provide an inexpensive, compact and convenient combination electric plug, carrier and stand for a vaporizer which is easily applied to the vaporizer.

Other objects and advantages will hereinafter appear.

In the accompanying drawings in which similar reference characters denote corresponding parts:

Figure 1 is a perspective view of the vaporizer showing the assembly of a carrier of this invention with a vaporizer.

Figure 2 is a perspective view showing the carrier separated from the vaporizer.

Figure 3 is an exploded view showing the details of the electric plug.

Figure 4 is a partial sectional view taken on lines 4—4 of Figure 2 showing the relationship of the plug to the several parts of the vaporizer when the carrier is assembled with the vaporizer.

Figure 5 is a bottom view of the plug with part of the casing removed showing the manner in which a spring contact member of the plug engages an electrode terminal of the vaporizer and further showing the manner in which the spring contact member is displaced centrally by the cam of the spring contact member.

Figure 6 is a perspective view showing the manner of inserting the spring contact means in the upper casing member of a female plug embodied in this invention prior to assembling said plug.

Figure 7 is a perspective view illustrating the manner of cutting the wire before its insertion in the female plug embodied in this invention.

Figure 8 is a plan view of the inside surfaces of the lower casing member of a female plug embodied in this invention and also illustrating the manner in which the wire enters the female plug and is separated for placement in the serpentine grooves of the lower casing member.

Figure 9 is a partial section taken through line 9—9 of Figure 8.

2

Figure 10 is a partial section taken through line 10—10 of Figure 8.

Figure 11 is an exploded view showing the manner of assembling the upper and lower casing members of a female plug embodied in this invention and showing the disposition of the ends of the wire in the serpentine grooves of the lower casing member and the spring contact members in the upper casing member.

Figure 12 is a plan view of the upper surface of a female plug embodied in the present invention with part of the upper casing member cut away showing the manner in which the ends of the wire are electrically contacted with a spring contact member and the disposition of the spring contact member when a female plug embodied in the present invention is assembled.

Referring to the drawings, the vaporizer unit is generally shown at 10, and is of usual construction comprising a conventional liquid container 11, which may be a glass jar. Heating electrodes 12, are attached to, but insulated from the bottom of cap 13 which is adapted to be screwed onto the top of container 11. The cap 13 also includes a vapor emission spout 14 and electrode terminals 15 and 16 which project from lid 13. Each of said electrode terminals comprises a vertically extending shank portion and a knob positioned above said shank portion. These are indicated at 15' and 16', respectively.

The combination carrier, stand and plug which is embodied in this invention is generally designated by 17. The carrier and stand is constructed principally of resilient sheet metal or other suitable resilient material. It is basically a U-shaped spring clamp formed to provide a lower jaw or base 18, an upper jaw 19 and a connecting handle member 20.

The upper jaw 18 comprises an inbent upper end of the handle member 20 and a female plug member 31 secured thereto by rivets 22 or any other suitable securing means. The handle member 20 is curved outwardly away from the vaporizer at its upper end to provide a hand grip space between the handle and the vaporizer. The handle member 20 preferably has its lower end curved and sloped inward with a sloping portion near its lower extremity disposed to engage and bear resiliently against a lower margin of the vaporizer.

The base 18 is an inturned, desirably integral extension of the handle member 20. It forms a three point support for the vaporizer. At the lower end of handle member 20 the metal extends downward past the bottom of the vaporizer, and is curved to a U-form to provide a rear foot 23 which connects with a substantially horizontal body portion 24. The body portion 24 is divided to form diverging arms 25 whose outer ends are bent downward and thence curved to U-form to provide forward spaced feet 26. Beyond the feet 26 the arms 25 terminate in upstanding fingers 27 which extend well above the plane of the body portion 24.

The metallic portion of the carrier may be stamped to provide the diverging arms 25 directly. An economy of metal can be realized, however, if a strip of metal is first stamped with the arms in parallel relation and the arms are subsequently spread to the form shown.

Another feature of the present invention is the novel female plug and assembly illustrated in detail in Figures 3 to 12. Female plug 31 constitutes part of upper jaw 19 of carrier 17 and secured thereto by rivets 22. It comprises a casing having separable upper and lower casing members 32 and 33 and a pair of spring contact members 38 disposed between the casing members. Members 32 and 33 are each provided with matching holes 34 through which rivets 22 are inserted to join the casing members and secure plug 31 to carrier 17.

The details of lower member 33 are best shown in

3

Figures 8 and 11 of the drawing. Two longitudinally extending grooves 37 are provided in the inner face of member 33 to seat spring contact member 38. The front wall and part of the floor at the front end of grooves 37 are cut away to provide channels 41 through which vertically extending terminals 15 and 16 may pass at right angles to said channels. These offset channels are small in order to prevent accidental finger insertion as a safety feature.

Grooves 37 are separated from each other by central wall 52 which is provided at its rear with two elevated slanted bearing surfaces 53 used to hold spring contact members 38 in place. Diagonally placed walls 51 extending from a point adjacent the inner termination of channels 41 to a point short of bearing surface 53 are provided in grooves 37. Diagonal walls 51 are provided toward their front end with indented bearing surfaces 54 also used to keep spring contact member 38 in place. Walls 51 also serve to partially separate serpentine grooves 50 in the region of its forward end from grooves 37. Grooves 37 communicate at the rear thereof with horizontally extending grooves 55 which are cut by serpentine grooves 50 and also serve as a seat for part of contact member 38. The details of grooves 55 are shown in Figure 9. It will be seen that the walls of this groove taper toward its floor.

Lower casing member 33 is also provided toward its rear with a horizontally extending groove 35 (see Fig. 3), cut through a lateral surface thereof to accommodate a wire 36 carrying current from a source. Wire 36 is split to provide two terminal ends 80 which are placed in serpentine grooves 50. Grooves 35 each communicate with one of the two serpentine grooves 50 which are equal in length and take a course that cuts across one of the horizontally extending grooves 55 and terminates adjacent one of the diagonal walls 51. Each wall 51 forms one side wall for one of the grooves 50 at its terminal end. In inserting the wire lead into female plug 31 this construction permits cutting the wire evenly, as illustrated in Figure 7, and laying the split terminal ends of the wire in grooves 50 so that they entirely fill the length of grooves 50.

Spring contact member 38 is made of any suitable flexible electrical conduction plate material. It comprises a head portion 70, a body portion 56 and a tail portion 57. Head portion 70 together with body portion 56 form a 7 with the arms of the 7 bent inwardly toward each other and the surface joining the arms of the 7 having a rounded contour 71. Portion 70 is provided at one edge thereof with teeth 73 to cut through the insulation of the wire disposed within serpentine grooves 50 on a line where grooves 50 cut horizontally extending grooves 55 to make electrical contact with said wires.

Tail portion 57 depends from body portion 56 of contact 38 and is smaller in width than portion 56. One edge of tail 57 is continuous with an edge of head portion 70 and is in the same plane with the edge of head portion 70 that carries teeth 73. The surface of tail 57 is bent in a continuous curve providing from front to rear first cams 59 and recesses 58. Cams 59 engage terminals 15 and 16 when the plug is connected to the vaporizer jar and cause body portion 56 of contact member 38 to rotate about a point 60 bringing the terminal end 72 of contact 38 into contact with a side of wall 52. This is illustrated in Figure 5 of the drawings. The sides of walls 52 thus act to stop the movement of contact member 38 about point 60 which serves to increase the resiliency of contact member 38. Recesses 58 act as a seat for holding electrodes 15 and 16 firmly in electrical contact with contact member 38. To avoid vertical displacement of electrodes 15 and 16 from female plug 31, these terminals are provided with hexagonally shaped heads which abut the upper edges of contact members 38 when the plug is moved vertically.

Upper casing members 32 are provided with two longi-

4

tudinally extending broad grooves 39 cut through the front wall thereof to support a portion of spring contact member 38. Two horizontally extending grooves 61 are provided at rear of groove 39 which communicate with groove 39. Grooves 61 also act to support a portion of spring contact member 38.

In assembling the female plug spring contact members 38 are first fitted into upper casing member 32 with teeth 73 exposed as illustrated in Figure 6. The wire is then cut as illustrated in Figure 7 so that the ends thereof are even. The wire is then split and each end is inserted into one of serpentine grooves 50 of lower casing member 33 as far as they will go. Since these grooves are of equal length, the ends of the wire extend the same distance into their grooves. Upper casing member 32 with assembled spring contacts 38 are then laid on the assembly of lower casing member 33 and wire 36 as illustrated in Figure 11 and riveted together. In this operation teeth member 73 cut through the insulation in the wire ends 80 in serpentine grooves 50 on a line where serpentine grooves 50 cross horizontally displaced grooves 55 thus electrically connecting wire 36 with spring contact member 38.

Spring contact member 38 is disposed so that its tail portion 57 is located centrally of and above channel 41. It is held in this position by grooves 55 of lower casing member 33, horizontally extending groove 61 of upper casing member 32, bearing surface 53 of central wall 52 and bearing surface 54 of diagonally extending wall 51. The head portion of the spring contact means 38 is held between grooves 55 and 61. Rounded portion 71 of spring contact 38 bears against bearing surface 53. The terminal portion of body 56 of contact member 38 bears against bearing surface 53. The serpentine grooves provide strain relief means for the spring clip and cord connection.

Plug 31 is placed in engagement with terminal electrodes 15 and 16 by sliding the plug at right angles to said terminal electrodes. The terminal electrodes pass through channel 41 and the front portion of grooves 37. As noted above, cams 59 are engaged and pushed centrally by terminal electrodes 15 and 16. This cam arrangement has the advantage that there is no chance of binding on the application of the plug to the terminal electrodes.

The present invention is not restricted to the specific embodiments illustrated and described in detail herein. Several modifications of the specific embodiments illustrated will be apparent to those skilled in the art without departing from the spirit of this invention.

We claim:

1. In a carrier for a vaporizer, the improvement which comprises a female plug secured to said carrier and adapted to engage the electrode terminals of said vaporizer, said carrier having a base forming a horizontally disposed plane of support for a vaporizer, said plug having horizontally disposed grooves, electrode means within said grooves, said grooves being adapted to receive mating electrode means for the first mentioned electrode means through movement of said plug in a substantially horizontal direction parallel to said plane when a vaporizer is supported on said base, said horizontally disposed grooves in said plug extending through the bottom of said plug and through one end of said plug, said electrode means in said grooves each comprising a spring contact member resiliently mounted for spring-like movement in a horizontal plane laterally of said end openings in said plug and having a normal position of rest in said plane and being fixedly mounted in said plugs to resiliently resist movement in said plane out of said normal rest position, a vaporizer mounted on said base, said vaporizer having said mating electrodes mounted thereon, said first mentioned electrode in said horizontal grooves being spaced from the top of said plug, said electrodes on said vaporizer comprising vertically extending shank portions having

5

knobs thereon above said vertically extending shank portions, said knobs being of a size to be received vertically between said spring contact members and the top of said plug, said knobs and said vertically extending shank portions of the second mentioned contact members being movable through said end of said plug and into engagement with said spring contact means with said knobs being positioned above said spring contact means, said spring contact means being adapted to resiliently engage said vertically extending portions of said second mentioned electrode means.

2. A female electric plug comprising upper and lower casing members having inner, outer, side, front and back faces, said lower member being provided in its inner face with two longitudinally extending grooves separated from each other by a central wall, said central wall being provided toward its rear with protruding bearing surfaces, the front portion of said longitudinally extending grooves being cut through the front and bottom faces of said lower casing member to form two longitudinally extending channels, two diagonally extending walls disposed in said longitudinal grooves, said diagonally extending walls being provided near their front terminations with second bearing surfaces, said lower casing member also being provided with a substantially horizontal groove cut through a side face thereof, two serpentine grooves of equal length in said lower casing member communicating with said horizontally extending groove, said upper casing member also being provided with grooves matching grooves of said lower casing member, spring contact means disposed within said longitudinally extending groove bearing rearwardly on said protruding bearing surface and forwardly on said second bearing surface, the front portion of said spring contact means extending above said channels of said longitudinally extending grooves, electrical wire disposed in said horizontally extending groove and said serpentine grooves and in electrical contact with said spring contact means, and means for securing the upper casing member to the lower casing member.

3. In combination, a carrier and a vaporizer, said carrier including a base forming a horizontally disposed plane of support for said vaporizer, said vaporizer comprising a body having a cover with electrode terminals projecting upwardly from said cover, said upwardly projecting electrode terminals comprising spaced vertically extending shank portions, knob portions on said terminals positioned above said shank portions and projecting laterally thereof, a female plug secured to said carrier, said plug having electrode means adapted to contact the electrode terminals on said cover, said plug having horizontally disposed grooves therein with said electrode means being mounted within said grooves, each of said grooves extending outwardly through the bottom of said plug and through one end of said plug, said plug being movable horizontally, electrode means within said grooves each comprising spring contact means mounted in a fixed position and having a normal position of rest, said electrode means being resilient and movable out of said normal position of rest and into engagement with said electrode terminals through horizontal movement of said plug, said electrode means in said plug being spaced

6

from the top of said plug a distance greater than the height of said knobs, said knobs being each receivable between one of said electrode means and the top of said plug with said contact means resiliently bearing against said vertically extending shank portions of said terminals.

4. The apparatus of the claim 3, wherein said carrier comprises a resilient handle extending upwardly from said base, said female plug being connected to said resilient handle above said base, said handle being connected to said base so as to normally urge said plug horizontally with respect to said base into engagement with said terminals.

5. The apparatus of claim 4, including a ridge means formed on said cover, said plug being urged into engagement with said ridge means by said resilient handle with said ridge means limiting the movement of said plug laterally of said terminal in a horizontal direction.

6. The apparatus of claim 3, including said spring contact means within said plug, each having a recess formed complementarily to the vertically extending shank portions of said contact elements on said vaporizer, said recesses being positioned inwardly of the end of said contact members over said openings in the bottom of said plug which connects to said grooves in said plug.

7. In combination a carrier, a vaporizer and female plug; said vaporizer having a cover with electrode terminals projecting upwardly and stop means also projecting upwardly from said cover to limit the horizontal movement of said electrode terminals into said female plug, said terminals having shanks terminating in enlarged end portions adapted to be engaged by contact means in said female plug, said contacts engaging said shanks whereby the vertical separation of said female plug from said cover is avoided, said female plug having grooves on its under surface and opening into an end surface thereof through which said electrode terminals may pass, the upper portion of said grooves being enlarged to accommodate the passage of said terminals therethrough, said carrier having an upwardly extending resilient arm secured to said female plug and urging said female plug horizontally into engagement with said electrode terminals and said stop means.

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