May 29, 1956 R. FONT ET AL 2,748,328

COMBINATION PRONGED BASE FOR ELECTRICAL DEVICES

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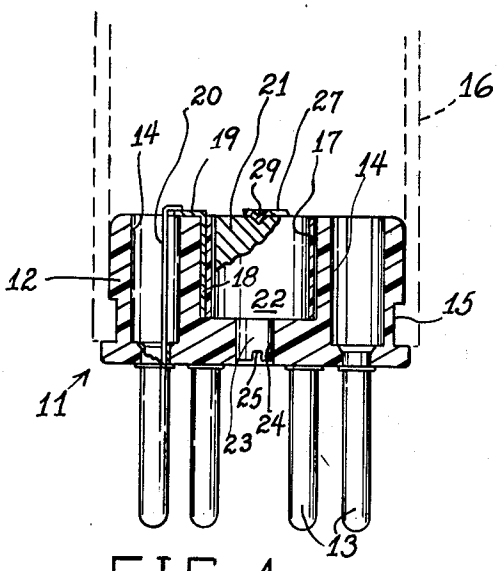


FIG. 1

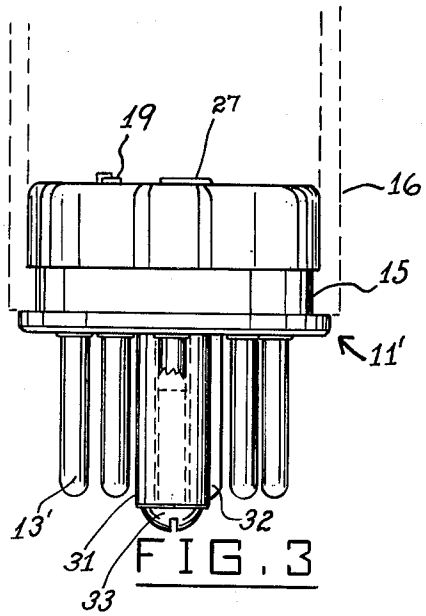


FIG. 3

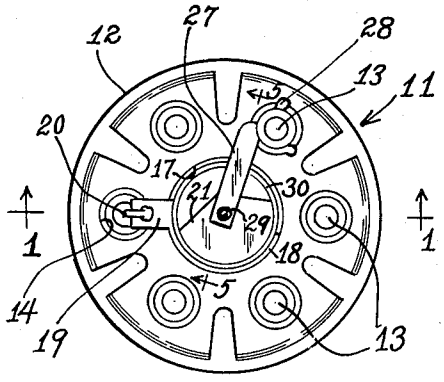


FIG. 2

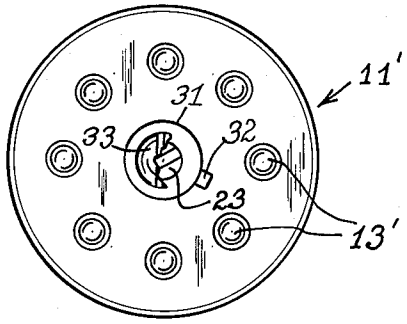


FIG. 4

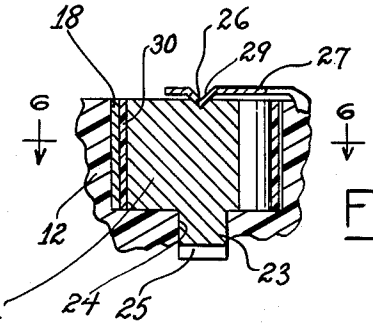


FIG. 5

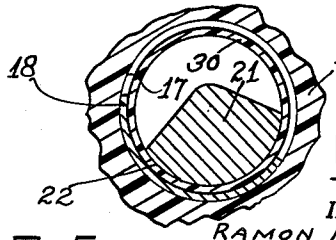


FIG. 6

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COMBINATION PRONGED BASE FOR ELECTRICAL DEVICES

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5 Claims. (Cl. 317—257)

This invention relates to pronged connectors, and more particularly to a pronged base of the type including a condenser incorporated therein.

A main object of the invention is to provide a novel and improved pronged base for use with an electrical unit, such as a vacuum tube, coil assembly, piezoelectric crystal assembly, or the like, said base including a variable condenser therein, the device being simple in construction, being easy to adjust, and being stable in operation.

A further object of the invention is to provide an improved combination pronged base and variable condenser which is inexpensive to manufacture, which is rugged in construction, and which is compact in size.

A still further object of the invention is to provide an improved pronged base for an electrical component, said base embodying a trimmer condenser therein which may be readily adjusted to regulate the performance of the component mounted on the base.

A still further object of the invention is to provide an improved combination pronged base and variable condenser which will not be substantially affected by ambient temperature and humidity variations, which will not be readily shaken out of adjustment by mechanical vibration, and which will remain in adjusted position over long periods of time and under severe operating conditions.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the acompanying drawings, wherein:

Figure 1 is a vertical cross-sectional view taken through one form of improved combination pronged base constructed in accordance with the present invention said view being taken on line 1—1 of Figure 2.

Figure 2 is a top plan view of the pronged base of Figure 1.

Figure 3 is a side elevational view of another form of combination pronged base according to the present invention.

Figure 4 is a bottom plan view of the pronged base of Figure 3 with a portion of the protective bottom cover screw broken away.

Figure 5 is an enlarged fragmentary cross-sectional detail view taken on line 5—5 of Figure 2.

Figure 6 is a cross-sectional detail view taken on line 6—6 of Figure 5.

Referring to the drawings, and more particularly to Figures 1, 2, 5 and 6, 11 generally designates a pronged base comprising the main body 12 of rigid insulating material, provided with the contact prongs 13. As shown, the body 12 is formed with respective vertical bores 14 communicating with the top ends of the respective contact prongs 13. Said body is also formed with the peripheral groove 15 adapted to be lockingly engaged by an inwardly extending rim element of the housing member 16 to be secured on the pronged base. Said housing member may comprise the outer housing of a vacuum tube, coil assembly, piezoelectric crystal assembly, or other component to be mounted on the pronged base.

The body 12 is centrally formed with a cylindrical bore 17 extending axially in said body. Disposed in said bore against the wall thereof is an arcuate plate element 18 of relatively thin sheet metal, said plate element extending for the full height of bore 17 and being formed at one top corner thereof with a terminal lug 19 which engages the top surface of body 12 and extends over a vertical bore 14. The lug 19 is electrically connected to the prong 13 associated with said vertical bore 14 by a connecting wire 20.

The plate element 18 is of substantial arcuate extent and preferably extends about halfway around the internal circumference of bore 17. Designated at 21 is a metal rotor block which comprises a main body substantially equal in height to the height of bore 17, said block having an arcuate outer surface 22 which is concentric with bore 17, is slightly smaller in radius than said bore, and which preferably extends about halfway around the internal circumference of said bore. Block 21 is disposed inside the bore 17 and is integrally formed with an axial pivot stud 23 which is rotatably received in a central aperture 24 formed in the bottom wall of bore 17. Stud 23 is provided with a screw driver groove 25 which is accessible from the bottom of base 11, whereby the block 21 may be rotatably adjusted at times by engaging a screw driver blade in the groove 25.

The top surface of block 21 is formed with a conical recess 26 which is axially located relative to bore 17. Designated at 27 is a resilient contact arm formed integral with and extending from a terminal element 28 secured in one of the vertical bores 14 and electrically connected to the contact prong 13 associated therewith. The end portion of resilient arm 27 is locally depressed at 29 to define a conical pivot point which pivotally engages in the conical recess 26 and exerts a retaining force on the block 21, holding said block in the bore 17, as well as establishing the electrical connection between the block and the prong associated with terminal element 28.

Disposed in the bore 17 between block 21 and plate element 18 is a thin cylindrical shell 30 of flexible insulating material, such as thin plastic tubing, or the like, which provides a dielectric layer between plate element 18 and sector block 21.

As shown, the dielectric shell 30 extends for the full height of bore 17 and is retained therein by the overlying contact arm 27.

As shown in Figure 6, the flexible shell 30 fits closely between the arcuate plate element 18 and the arcuate surface of block 21, whereby there is considerable frictional binding of the shell against the surface of the block. This serves to hold the block in adjusted position relative to the plate element 18. A substantial torque must be applied to the stud 23 to rotate said block and to vary its adjusted position. It will be further apparent that the capacity between block 21 and plate element 18 will be directly proportional to the opposing overlapping areas thereof and that said capacity can be varied by rotating said block.

The terminal elements 19 and 28 may be electrically connected to the electrical component mounted on the base 11 by suitable relatively short wires in the housing 16, whereby the condenser may be connected directly to the component without requiring external connections, thus minimizing undesired lead capacity. In the case of a coil or piezoelectric crystal assembly, frequency adjustments may be made directly without requiring the use of an external padding or trimmer condenser. Similarly, a desired value of capacity may be applied directly between the lead wires of the elements of a vacuum tube assembly mounted on base 11 without requiring the use of an external trimmer condenser.

In the form of the invention illustrated in Figures 3

and 4, the base, shown at 11', is of the octal type and is provided with the hollow central depending key member 31 having the aligning rib 32. A removable cover screw 33 is threadedly engaged in the bottom of the key member 31. The capacity adjusting stud 23 is accessible through the hollow key member 31 by removing the screw 33, whereby the blade of a screw driver may be inserted through the key member 31 to engage the groove 25 in stud 23. After the desired capacity adjustment is made, the screw 33 may be replaced to seal the key member 31 against the entry of moisture or other undesired foreign material. As in the previously described form of the invention, the terminal elements 19 and 27 are electrically connected to respective contact prongs, shown at 13', of the base 11'.

The condenser is also protected against rapid fluctuations in ambient temperature, since the elements thereof are substantially completely enclosed by material having low heat conductivity, and also because the block 21 is of substantial mass, whereby its thermal capacity is relatively large, preventing rapid fluctuations of its temperature and preventing rapid fluctuations of the temperature inside the bore 17.

While certain specific embodiments of combination pronged bases and condensers have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In an electrical device, a base member, a plurality of prongs rigidly secured to said base member and adapted to be electrically connected to the device, said base member being formed with a cylindrical recess, the bottom wall of said recess being formed with a central aperture, an arcuately curved conductive plate element disposed in said recess adjacent the wall thereof and defining one plate of a condenser, a conductive rotor block rotatably mounted in said recess, said block having an arcuate surface located adjacent said plate element, said arcuate surface being in capacitive relation to said plate element, means connecting said plate element to one of the prongs, a resilient arm connected to another prong and pivotally engaging the top of the block at a point axially located relative to the recess, dielectric means disposed between the arcuate surface of the block and said plate element, and an axially extending stud element on the bottom of said block extending into said central aperture, whereby it may be engaged from below the base member to rotate the block and adjust the capacity of said condenser.

2. In an electrical device, a base member, a plurality of prongs rigidly secured to said base member and adapted to be electrically connected to the device, said base member being formed with a cylindrical recess, the bottom wall of said recess being formed with a central aperture, an arcuately curved plate element disposed in said recess adjacent the wall thereof and defining one plate of a condenser, a conductive rotor block rotatably mounted in said recess, said block having an arcuate surface located adjacent said plate element, said arcuate surface being in capacitive relation to said plate element, a sleeve element of thin flexible dielectric material surrounding said block and having a portion thereof disposed between the arcuate surface of the block and said plate element, and a stud element on said block extending into said central aperture, whereby it may be engaged from below the base member to rotate the block and adjust the capacity of said condenser.

3. In an electrical device, a base member, a plurality of prongs rigidly secured to said base member and adapted to be electrically connected to the device, said base member being formed with a cylindrical recess, the bottom wall of said recess being formed with a central aperture, an arcuately curved conductive plate

element disposed in said recess adjacent the wall thereof and defining one plate of a condenser, a conductive rotor block rotatably mounted in said recess, said block having an arcuate surface located adjacent said plate element, said arcuate surface being in capacitive relation to said plate element, means connecting said plate element to one of the prongs, a resilient arm connected to another prong and pivotally engaging the top of the block at a point axially located relative to the recess, a sleeve element of thin flexible dielectric material surrounding said block and having a portion thereof disposed between the arcuate surface of the block and said plate element, and an axially extending stud element on the bottom of said block extending into said central aperture, whereby it may be engaged from below the base member to rotate the block and adjust the capacity of said condenser.

4. In an electrical device, a base member, a plurality of prongs rigidly secured to said base member and adapted to be electrically connected to the device, said base member being formed with a cylindrical recess, the bottom wall of said recess being formed with a central aperture, an arcuately curved conductive plate element disposed in said recess adjacent the wall thereof and defining one plate of a condenser, a conductive rotor block rotatably mounted in said recess, said block having an arcuate surface located adjacent said plate element, said arcuate surface being in capacitive relation to said plate element, dielectric means comprising flexible dielectric material disposed between the arcuate surface of the block and said plate element, a stud element on said block extending into said central aperture, whereby it may be engaged from below the base member to rotate the block and adjust the capacity of said condenser, a depending hollow key member rigidly secured to said base member coaxially with said stud element, and a closure member detachably secured in the bottom end of said key member for protecting the key member against the entry of foreign material.

5. In an electrical device, a base member, a plurality of prongs rigidly secured to said base member and adapted to be electrically connected to the device, said base member being formed with a cylindrical recess, the bottom wall of said recess being formed with a central aperture, an arcuately curved conductive plate element disposed in said recess adjacent the wall thereof and defining one plate of a condenser, a conductive rotor block rotatably mounted in said recess, said block having an arcuate surface located adjacent said plate element, said arcuate surface being in capacitive relation to said plate element, means connecting said plate element to one of the prongs, a resilient arm connected to another prong and extending over the top surface of the block, said top surface being formed with a pivot recess located axially relative to said first-named recess, a depending pivot element on said arm engaged in said pivot recess, dielectric means disposed between the arcuate surface of the block and said plate element, and an axially extending stud element on the bottom of said block extending into said central aperture, whereby it may be engaged from below the base member to rotate the block and adjust the capacity of said condenser.

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