May 22, 1956 F. W. PARRISH 2,747,167

PLUG-IN MOUNT FOR A CIRCUIT UNIT

Filed Jan. 4, 1954

FIG. 1

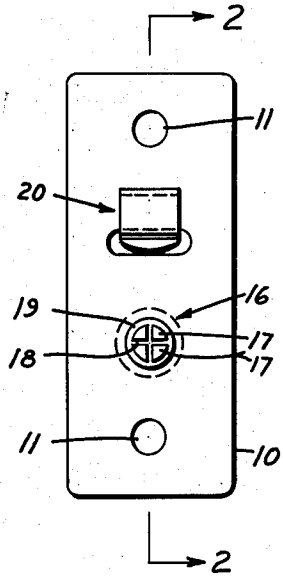


FIG. 2

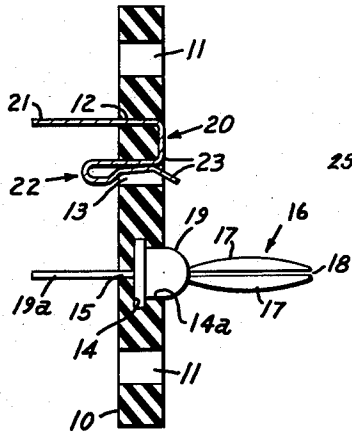


FIG. 3

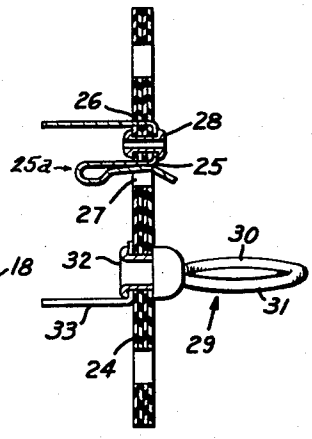


FIG. 4

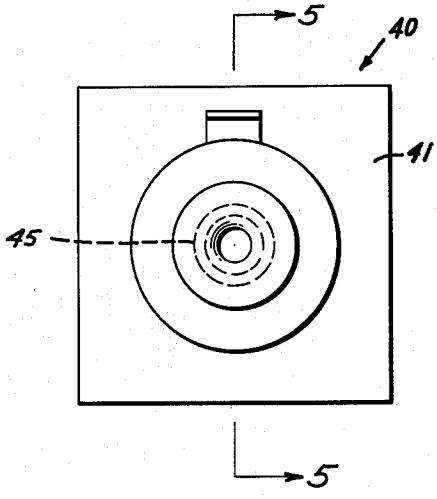
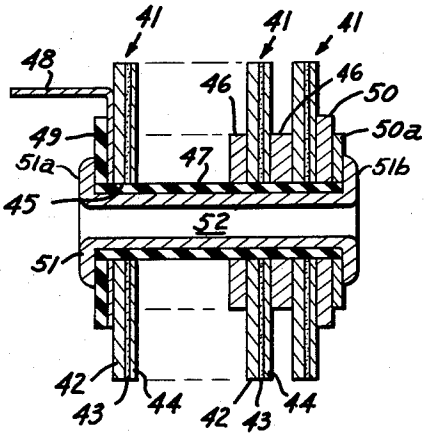


FIG. 5



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PLUG-IN MOUNT FOR A CIRCUIT UNIT

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1 Claim. (Cl. 339—176)

This invention pertains to electrical plug-in mounts, and has for an object the provision of a mount which simplifies the installation and replacement of circuit units. An additional object is to provide a plug-in mount capable of connection with circuit units of various sizes.

A feature of my invention resides in a mount having an insulating base provided with a resilient conductive female receptacle and a resilient conductive prong spaced apart from each other. A circuit unit may be plugged to the mount by inserting a male connection of the unit into the receptacle of the mount, and inserting the prong of the mount into a cavity of the circuit unit.

The novel mount is particularly applicable for use with dry plate rectifiers, such as selenium rectifiers, although it is useful with other types of circuit units as well.

These foregoing and other features of my invention will be fully understood from the following detailed description and the accompanying drawings, of which:

Fig. 1 is a plan view of a mount according to the invention;

Fig. 2 is a cross-sectional view taken at line 2—2 of Fig. 1;

Fig. 3 is a cross-section of an alternate form of the invention;

Fig. 4 is an elevation of a rectifier unit satisfactory for use with the mount of this invention; and

Fig. 5 is a cross-sectional view taken at line 5—5 of Fig. 4.

Referring to the drawings, Fig. 1 shows a mount according to the invention having an insulating strip **10** for a base which may be of molded rubber, Bakelite, or some other insulating material. The strip is pierced by holes **11** for attaching the strip to a chassis. The strip also has slots **12** and **13**, and a recessed seat **14** with an overhanging shoulder **14***a*. Another slot **15** pierces the strip from the inside of the seat.

A conductive male prong **16** of the common "split banana" type comprises four approximately quadrantal springing leaves **17**, of spring metal or the like, which when assembled as shown with slits **18** between them, make up a prong of generally circular cross-section which can flex and expand or contract in a lateral direction with respect to the prong's longitudinal axis. A conductive cap **19**, ordinarily of metal, clamps the leaves together and fits in the recessed seat under the shoulder **14***a*. A conductive strip **19***a* is affixed to the cap, and passes through slot **15** so as to project from the strip. Leads and the like (not shown) may be soldered to this strip **19***a* so as to incorporate the male prong into an electrical circuit.

A spring clip **20** forms a female receptacle, and comprises a generally flat strip of metal, one end of which is inserted in slot **12** and projects therefrom to form a projection **21** for attaching leads to incorporate this receptacle into a circuit. At the other end of the strip there is a resilient bend or receptacle **22** which fits in slot **13**.

The bend has two arms **23**, which may be sprung apart to form the receptacle. These arms are on opposite sides of the longitudinal axis of the receptacle, which longitudinal axis extends substantially perpendicularly from the base, and parallel to the longitudinal axis of the prong. The male prong and female receptacle face the same side of the strip. This entire mount may conveniently be made at one time by molding the metal elements into the base, making the usual provisions in the molding process for other holes and slits, such as the mounting holes **11** and slot **13**.

Fig. 3 shows an alternate form of the plug-in mount which is assembled by riveting operations. In this mount, a rigid strip **24** forms the insulating base, and may be of laminated Bakelite, or some other insulating substance. This embodiment has a resilient spring clip **25** for a female receptacle **25***a* similar to that described above, which is inserted into two slots **26**, **27** with the receptacle in one slot, and the other end projecting from the rear of the other slot. Leads may be soldered to this projection. The spring clip is bound to the strip by a rivet **28**. The male prong **29** is a "hairpin" type, which comprises a bent wire having two opposite elements **30**, **31** with a space therebetween so that they may be compressed toward each other. This prong is fastened to the strip by a hollow rivet **32** which is made of conductive material. A conductive lug **33** is bound under the rivet on the side of the base away from the prong and projects to form a terminal to which leads may be soldered.

Figs. 4 and 5 show a dry plate rectifier which is well suited for use with the plug-in mounts of this invention. This is illustrative of an electrical circuit unit of which one terminal is a tubular cavity terminal **52** and the other terminal of which is a protruding lug terminal **48**. While a rectifier is shown for purposes of illustration, the mount may also be used to plug in capacitance, resistance, inductance, or other circuit units in the same manner. This rectifier **40** comprises a number of dry rectifier elements **41** which are constructed in a well known manner. Each rectifier element has a square conductive base plate **42** which may be of iron or aluminum and having a coating **43** of metallic selenium on one surface for the active electrode. A coating **44** of another metal is sprayed onto the selenium for the counter-electrode. Such coatings are well known in the art, and need not be further described here. The relative dimensions of the selenium layer and metal layer **44** relative to the base plate are shown disproportionately thick in the drawings for purposes of illustration.

According to a well-known rectifier assembly arrangement, each base plate has a hole **45** at the center. A conductive spacer or washer **46** is placed between each adjacent plate, and the interleaved rectifier elements and spacers are placed onto a hollow tube **47** made of an insulating material such as Bakelite or fiber. The rectifier elements are all faced in the same manner so that they will act in series.

A bent strip to form lug terminal **48** having a hole for the tube **47** is placed over the lefthand end of the tube as shown in Fig. 5 and forms a male terminal for the rectifier. Then an insulating washer **49**, preferably of fiber is placed over the tube **47** to the left of the portion of the strip forming the terminal lug which surrounds the tube. Two conductive washers **50**, **50***a* are placed over the righthand end of the tube. Finally, a headed eyelet **51** is passed through the insulating tube with its formed head **51***a* to the left and bearing on the fiber washer. Its other end at **51***b* is crimped around the righthand end of the tube **47** so as to contact the conductive washers **50**, **50***a*. The eyelet has a longitudinal central hole which forms the cavity for the cavity terminal **52** of the rectifier. The strip forming the terminal lug **48** is

insulated from the eyelet by insulating washer **49** and tube **47**.

The number of rectifier elements used in a given rectifier is determined by its intended use. The rectifier is shown in Fig. 5 to illustrate the stacking arrangements of the elements it being understood that the spacing between the lug terminal **48** and washer **50** will be entirely filled with a stack of rectifier elements **41** and spacers **46**.

In use, an assembled mount such as is shown in Fig. 2, is fixed as desired, for example in a radio or television chassis, and the projecting leads **19***a* and **21** are soldered to leads so as to form a permanent part of an electrical circuit (not shown). Then the electrical circuit unit to be connected, such as a rectifier like that of Figs. 4 and 5, is plugged to the mount by inserting the male prong **16** (or **29**) into the cavity terminal **52** in the eyelet **51**, and the lug terminal **48** between the arms of the bend **22** (or **25***a*) of the spring clip on the mount. The rectifier is thereby positioned and held in place so that it cannot rotate. The sides of the metal prong make electrical contact with the eyelet, and the terminal lug makes electrical contact with the spring clip. The leaves of the male prong are initially spread apart so that insertion of the prong into the tube squeezes them back together. This spring force makes a firm contact between the prong and wall.

By means of this mount, rectifiers or other circuit units may be installed and replaced in a circuit as simply as a vacuum tube in a socket. There are no joints to solder, or other clamping devices to be used. Only a plugging action is required.

This mount is a universal type which can accommodate a wide range of unit sizes of all kinds including half-wave, radio and television rectifiers, or other circuit elements. Various sizes of circuit units may be mounted on an eyelet of a given size for use with this mount, or, if preferred, the leaves of the male prong may simply be spread apart to make connection inside eyelets of different diameters. When installed, these elements are automatically positioned, and are rigidly supported by the mount.

This invention is not to be limited to the embodiments described in the description and illustrated in the drawings, which are given by way of illustration and not of limitation but only in accordance with the scope of the appended claim.

I claim:

A plug-in mount adapted to make connection with a circuit unit which unit is provided with a lug terminal and a cavity terminal, said mount comprising: a flat insulating base having two sides, said base having a pair of slots therethrough, and a recessed seat therein, a resilient receptacle comprising a flat strip bent into a pair of spring arms for receiving said lug terminal, said spring arms being disposed in one of said slots and facing outward from one side of said base, said strip having a portion passing through the second of said slots to the other side of the base, a conductive prong having a longitudinal axis, which prong is seated in said recessed seat, facing from the same side of the base as the receptacle, and comprising flexible elements for expanding laterally with respect to said longitudinal axis so as to be compressible when inserted into the said cavity terminal, and a conductive member attached to said prong and passing through the insulating base.

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