Dec. 12, 1950 M. A. LOSQUADRO 2,533,483

ELECTRIC TERMINAL SYSTEM

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FIG. 1A

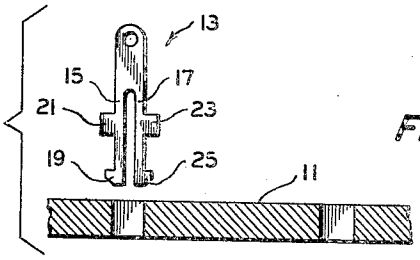


FIG. 1B

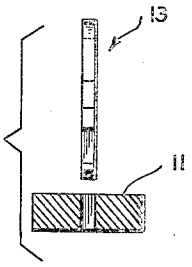


FIG. 1C

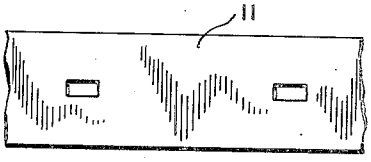


FIG. 3A

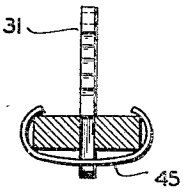


FIG. 3B

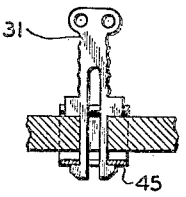


FIG. 2

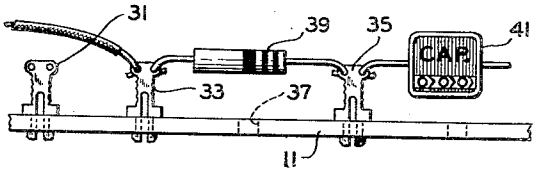


FIG. 4

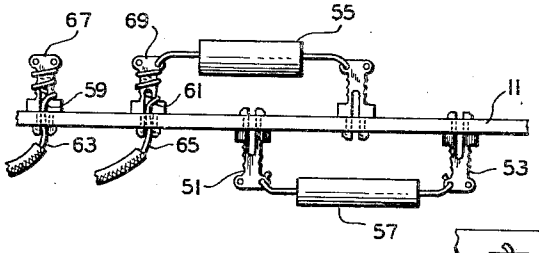
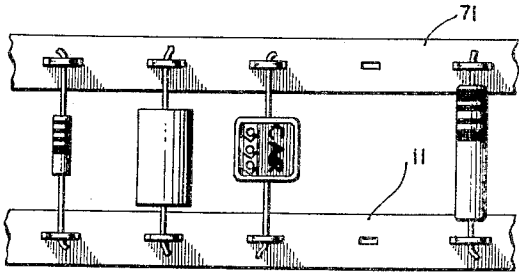


FIG. 5



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ELECTRIC TERMINAL SYSTEM

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3 Claims. (Cl. 173—324)

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The present invention relates to electric terminal systems and is particularly concerned with improved terminal lugs and boards for circuit junctions and for supporting small electrical parts such as resistors and capacitors.

Heretofore broad dielectric terminal boards have been assembled with multiple parallel rows of fixedly inserted terminal lugs spaced at regular intervals. These lugs have been made of flat or tubular soft metal stock, each lug having a lower shaft portion to be received by a punched hole in the dielectric board. The lugs have been inserted in the boards and then machine-tool distorted adjacent the surface of the board as by spreading the lower ends of tubular lugs or by upsetting the side portions of lugs made of flat stock. Such operations usually require expensive fixtures in power-operated tools, and the lugs, once inserted, are so deformed as not to be readily removable. Ruptures of the terminal board often occur in the machine assembly, so that the boards must be carefully examined and many must be rejected. Terminal board assemblies of this type are relatively expensive; they are inflexible as to application since different boards must be supplied for different lug spacings and row spacings and lugs cannot be readily removed; and they are not adapted for passage of wires through the boards and for inverse mounting of lugs in places rendering this desirable. Due to the requirement of large, powerful tools for assembly, these lug systems cannot be duplicated in the field, but instead, must be eliminated if damaged and the wiring and elements formerly joined thereto must be haphazardly arranged in the equipment from which the terminal strip is removed.

It is the object of the present invention to provide an improved terminal system, and more specifically, it is an object of this invention to provide a new type terminal system overcoming the above disadvantages of prior fixed-terminal lug boards.

It is a further object to provide a terminal system admitting of assembly without special tools in any of a wide variety of terminal lug configurations.

These objects have been achieved by the provision of narrow, single-row dielectric strips with apertures spaced at intervals, and with terminal lugs having divided shanks inserted into the apertures and elastically restrained to seat snugly therein and form rigid supports for wiring and for small electric circuit components.

The division of the shanks of the lugs into

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multiple elastically-deflectable prongs makes these lugs readily insertable and removable with a hand tool such as a pair of pliers. Therefore, one or more lugs readily may be removed to allow increased free space between two lugs along the strip, as for mounting a rod-like fixed resistor unit lengthwise therebetween. Also, a lug may be removed and reinserted in inverted position, to adapt a lug strip to special installation requirements. The provision of single-row strips further aids in the achievement of greater flexibility and adaptability, since two strips may be mounted parallel or divergent, as desired, and at any such spacing between strips as is expedient in a particular use. Where a single aperture is employed to receive the plural prongs of a lug shank, wires may be passed up from beneath the terminal strip through the space between the prongs.

These terminal arrangements are illustrated in the accompanying drawings, wherein

Figs. 1A, 1B, and 1C illustrate a divided-shank terminal lug and the dielectric strip therefor;

Fig. 2 shows an irregular series of divided-shank terminal lugs in a dielectric strip for supporting a variety of electric circuit components;

Figs. 3A and 3B show details of an optional assembly arrangement including spring clasps;

Fig. 4 further illustrates the variety of ways in which the lugs of the present invention may be employed; and

Fig. 5 illustrates the use of spaced single-row lug strip assemblies for supporting small circuit components therebetween.

A portion of a strip of dielectric material such as Bakelite is shown at 11 in the front elevation view in Fig. 1A. This strip 11 is provided with a series of spaced apertures therethrough (see also Figs. 1B and C), which may be rectangular for maximum confinement of terminal lugs made from sheet metal stock. A lug for insertion in one of the apertures is illustrated at 13. This lug, which may be provided with one or more apertures in the upper part to receive wires, is die-punched from highly elastic metal such as spring brass or beryllium copper, the latter being considered preferable.

The lug 13 is longitudinally slotted through an appreciable distance from its lower end, so that two spaced legs or prongs 15 and 17 are formed along the shank thereof. These legs or prongs are made with width variations or outward projections 19, 21, 23 and 25 which will hereafter be referred to as toes. The upper toes 21 and 23 are spaced from the lower toes 19, 25 by a

dimension corresponding approximately to the thickness of the strip 11. The width of the shank portion intermediate the upper and lower toes preferably is made to exceed the length of the aperture in strip 11 by a slight margin for snugness of the seating of the lug 13 when the legs 15 and 17 are momentarily sprung together and inserted in strip 11 and permitted to spring apart, tending to return to their normal spacing.

Fig. 2 illustrates lugs 31, 33 and 35 seated in suitable apertures in a section of terminal strip 11. These lugs are generally like lug 13 of Fig. 1, but are provided with dual wire-receiving apertures and serrated outlines for further convenience in securing conductor ends thereto preparatory to soldering them in place. While such an assembly ordinarily would be supplied with lugs occupying all of the apertures, Fig. 2 shows that a lug has been removed from one aperture 37 to leave a convenient space for the lengthwise installation of a rod-like fixed resistor 39 between terminal lugs 33 and 35. Other small electric circuit components such as a capacitor 41 similarly may be conveniently accommodated. The removal of one of the lugs is easily accomplished by squeezing the two prongs together to permit the lower toes to pass through the aperture.

Fig. 3 illustrates the optional use of a small apertured spring clasp 45 in the assembly of the terminal lug on the strip. Such a clasp may be added to insure tightness of seating with relaxed tolerance requirements on the spacing between the upper and lower pairs of sidewise projections or toes. The assembly of the preformed clasp 45 for exerting downward pressure on the lower toes of a terminal lug such as lug 31 is illustrated in end view A and front view B of Fig. 3.

Fig. 4 further illustrates the flexibility of the present invention, showing alternate ones 51 and 53 of a series of terminal lugs inserted in inverted positions so that small components 55 and 57 may be staggered above and below the strip and arranged for greatest convenience according to any set of circuit requirements. This view further illustrates at 59 and 61 the passage of conductors 63 and 65, respectively, upward from beneath the dielectric strip 11, through the spaces between the spaced prongs of lugs 67 and 69.

Fig. 5 illustrates the use of a pair of strips 11 and 71 each provided with a series of lugs, and hence spaceable according to each set of requirements, so that a large stock of terminal plate assemblies of various spacings of plural terminal rows is obviated. The strips 11 and 71 may be arranged parallel, or may be situated along divergent lines for accommodating a series of parts of graduated lengths.

Since many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. In combination, a dielectric strip having a series of spaced rectangular apertures therethrough, and a plurality of flat unitary terminal lugs of resilient metal each positioned in one of said apertures and each including a portion standing directly outward an appreciable distance from the surface of said strip, each of said terminal lugs being receptive to soldered connections and being of thickness substantially conformal to the width of the aperture and having a section above and below said aperture of width exceeding the length of the aperture and having a section within the aperture of lesser width than said sections above and below, each of said terminal lugs being longitudinally slotted from one end through the section below the aperture and the section within the aperture and therebeyond, and said aperture being of length slightly less than the width of said section of the lug within the aperture whereby said aperture compresses the sides of the lug toward each other and retains said lug snugly seated therein.

2. The combination as defined in claim 1, wherein the length of the aperture and the width of the lug section therein and the width of the slot therein are so related that the slot provides space for passage of at least one wire through the slot.

3. The combination as defined in claim 1, wherein the width of the longitudinal slot is at least as great as the excess of width of the lug below the aperture over its width in the aperture, whereby the sides of the terminal lug at the aperture are compressible for ejection of the terminal lug from the aperture.

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