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METHOD FOR MAKING RHEOSTATS

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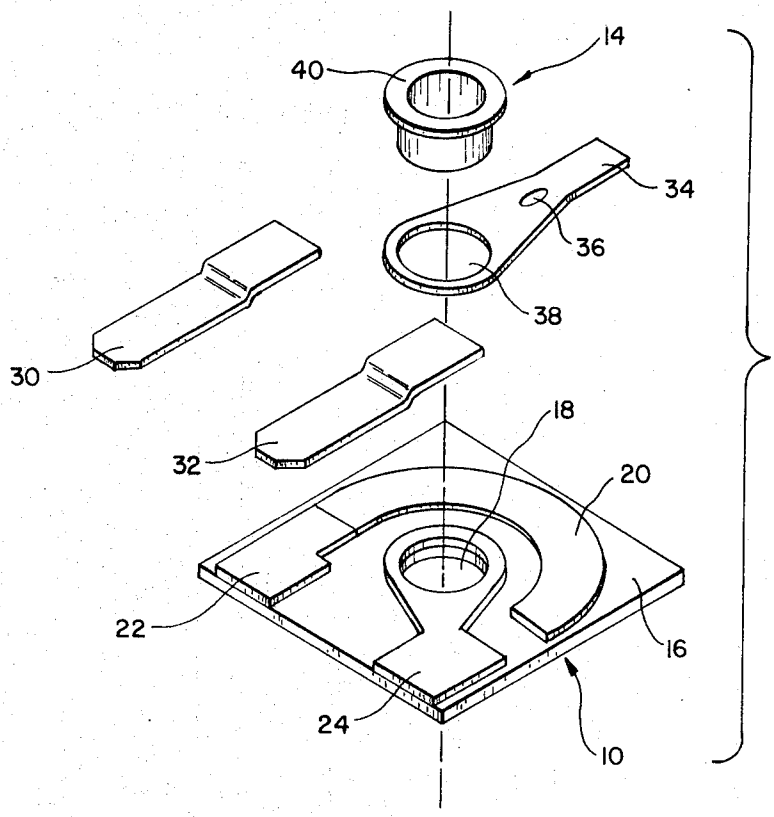


FIG.1

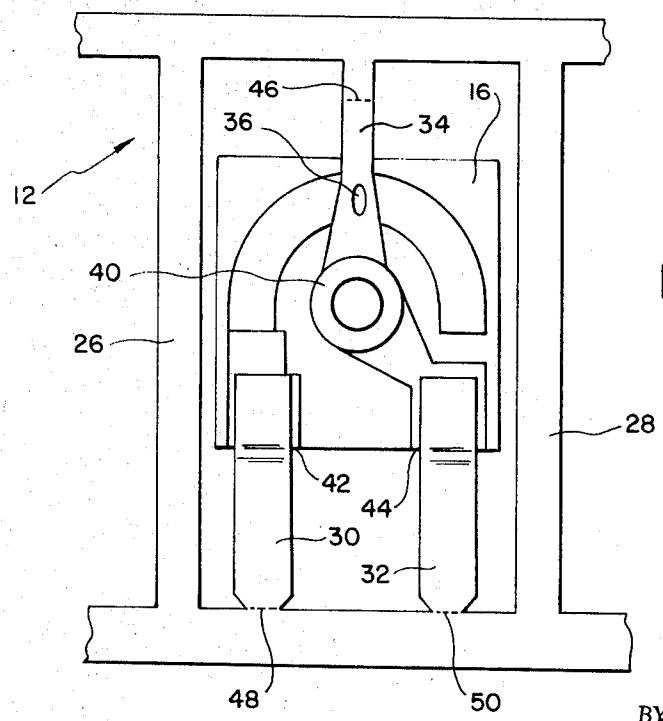


FIG.2

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METHOD FOR MAKING RHEOSTATS

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ABSTRACT OF THE DISCLOSURE

The disclosure relates to a method for making rheostats. A substrate is prepared for supporting a resistive pattern with a first conductive member at one end, the substrate including a second conductive member forming an electrically common connection. A conductive means is positioned over the substrate, the conductive means integrally supporting a wiper element and a terminal pair. The wiper element is rotatably secured to the substrate, so that one end makes adjustable and contiguous contact with the resistive pattern, while the other end is electrically continuous with the electrically common connection. The terminal pairs are then secured to the first and second conductive members, and finally the terminal pairs and the wiper element are severed from the conductive means where they are integrally joined.

BACKGROUND OF THE INVENTION

(1) Field of the invention

This invention relates to a method for making rheostats.

(2) Description of the prior art

While present day demands in the art of manufacturing electrical components are primarily addressed to miniaturization, nevertheless, the consideration of reducing costs continues to play an important, and in some applications, the dominant role.

Various cost reducing techniques are of course known in the art of electrical component manufacture. As an example, U.S. Pat. 2,887,558 to Tally discloses the use of a ladder stamping member, to facilitate the mass production of resistors suitable for printed circuitry applications.

SUMMARY OF THE INVENTION

The present invention relates to a method for producing rheostats. In a preferred embodiment of the invention a substrate is prepared having a resistive pattern with a first conductive member at one extremity, the substrate also supporting a second conductive member. The substrata are then laid in tandem on an assembly line. A conductive means is prepared having a configuration suitable for integrally supporting terminal pairs and wiper elements; such conductive means are then positioned over the substrata, and each wiper elemen is rotatably secured to a respective substrate so that the wiper element is both in adjustable contact with the resistive pattern, and is electrically continuous with said second conductive member. Next, each terminal pair is secured to the first and second conductive members respectively. Finally, the terminal pairs and the wiper elements are severed where they are joined integrally with the conductive means to provide a plurality of completed rheostats.

This invention has for its object providing a method for fabricating rheostats which will produce a low cost rheostat by reason of the simplicity of the method of manufacture.

The invention is more particularly described and illustrated in connection with the accompanying drawing which shows diagrammatically an embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an exploded view showing the component parts of the final assembly for a rheostat produced in accordance with the method of the instant invention; and

FIG. 2 is a top plan view showing the component parts in position prior to the final step in the method of the instant invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 and 2 the entire method is accomplished using three major components indicated generally at: **10**, **12** and **14**.

The component 10, which is most clearly shown in FIG. 1, is first prepared on a dielectric substrate **16**, centrally apertured at **18**, on which is arranged a resistive pattern **20**, (which may be arcuate), secured in any convenient manner and terminating at one extremity in a conductive member **22**; a second conductive member **24** is secured to the substrate **16**, and has a configuration, which in this illustrative embodiment, includes an aperture coincident with aperture **18** in the substrate.

The part **12** is prepared as a conductive means which may have any convenient configuration such as a ladder structure with rungs at **26**, **28**. Integral with the conductive means are a terminal pair **30**, **32**, and a wiper element **34**; the wiper element **34** includes a protuberance or dimple **36** and an aperture **38**.

The third major part of the assembly is the eyelet **40** for rotatably securing the wiper element **34**, although it will be readily appreciated that any fastening means may be used.

In the method of the invention, the substrate **10** is first prepared, and the substrata, (only one substrate is shown in FIG. 2), are then arranged along an assembly line with each respective substrate in tandem. Next, the conductive means **12** is prepared, and in the ladder configuration, here illustrated, it is positioned over the dielectric substrate **10**, with each substrate **10** being located between successive rungs **26**, **28** as shown in FIG. 2.

Next, the wiper element **34** is rotatably secured to the dielectric substrate **10**. In this embodiment an eyelet **40** is then passed through the aperture **38** in the wiper element, and through the aperture **18** in the substrate **10**, and by mechanical pressure it is movably secured to the substrate **10**, with the protuberance or dimple **36** contiguous with the resistive pattern **20**.

Next, the terminal pair **30**, **32** are secured to conductive members **22** and **24**, respectively, in any convenient manner such as by soldering as indicated at **42**, **44**.

Finally, the wiper element **34** and the terminals **30** and **32** are separated from the conductive structure **12**, by shearing along the lines as indicated at **46**, **48** and **50**, respectively.

This entire operation can take place at an accelerated pace, so that the rheostats can be produced in great numbers. The finished rheostat then has the general configuration shown in the exploded view in FIG. 1 with the wiper element **34** being enabled to move along the arcuate resistive pattern **20**, the protuberance or dimple **36** providing a means for arresting rotary displacement of the wiper element at the selected point along the resistive pattern **20**.

The invention has been described in detail with particular references to a preferred embodiment thereof but

it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

I claim:

1. A method for making a rheostat having a pair of terminals, one terminal being at one extremity of a resistive pattern, and a wiper element having one end electrically common with the other one of said terminal pair, the other end of said wiper element making adjustable contact with said resistive pattern, said method comprising the steps of:

(a) preparing a substrate supporting said resistive pattern terminating at one end in a first conductive member, with a second conductive member on said substrate at said electrically common point;

(b) positioning conductive means over said substrate, said conductive means having formed integral therewith said terminal pair and said wiper element;

(c) securing said wiper element to said substrate so that said wiper element is both in adjustable contact with said resistive pattern and is electrically continuous with said second conductive member;

(d) securing said terminal pair to said first and second conductive members respectively; and

(e) severing said terminal pair and said wiper element where they are joined integrally with said conductive means.

2. A method for making rheostats, each rheostat comprising a pair of terminals, one terminal being at one extremity of a resistive pattern, and a wiper element having one end electrically common with the other one of said terminal pair, the other end of said wiper element making adjustable contact with said resistive pattern, said method comprising the steps of:

(a) preparing substrata, each respective substrate supporting said resistive pattern terminating at one end in a first conductive member with a second conductive member on said respective substrate at said electrically common point;

(b) arranging said substrata with each respective substrate in tandem;

(c) preparing conductive means having formed integral therewith terminal pairs and wiper elements;

(d) positioning said conductive means over said arranged substrata respectively;

(e) securing each respective wiper element to a respective substrate so that each wiper element is both in adjustable contact with said resistive pattern and is electrically continuous with said second conductive member;

(f) securing said terminal pairs to said first and second conductive members respectively; and

(g) severing each of said terminal pairs and each of said wiper elements where they are respectively joined integrally with said conductive means.

3. A method for making a rheostat having a pair of terminals, one terminal being at one extremity of an arcuate resistive pattern, and a wiper element having one end electrically common with the other one of said terminal pair, the other end of said wiper element making moving contact with said arcuate resistive pattern, said method comprising the steps of:

(a) preparing a substrate supporting said arcuate resistive pattern, said arcuate resistive pattern terminating at one end in a first conductive member, with a second conductive member on said substrate at said electrically common point;

(b) positioning conductive means over said substrate, said conductive means having formed integral therewith said terminal pair and said wiper element, said wiper element having a protuberance means at said other end adapted for said moving contact with said arcuate resistive pattern;

(c) rotatably securing said wiper element at said one end so that said wiper element is electrically connected with said second conductive member, and said protuberance means is contiguous with and movable along said arcuate resistive pattern;

(d) securing said terminal pair to said first and second conductive members respectively; and

(e) severing said terminal pair and said wiper element where they are joined integrally with said conductive means.

4. A method for making rheostats, each rheostat comprising a pair of terminals, one terminal being at one extremity of an arcuate resistive pattern, and a wiper element having one end electrically common with the other one of said terminal pair, the other end of said wiper element making moving contact with said arcuate resistive pattern, said method comprising the steps of:

(a) preparing substrata, each respective substrate supporting said arcuate resistive pattern, said arcuate resistive pattern terminating at one end in a first conductive member, with a second conductive member on said respective substrate at said electrically common point;

(b) arranging said substrata with each respective substrate in tandem;

(c) preparing conductive means having formed integral therewith terminal pairs and wiper elements each wiper element respectively having a protuberance means at said other end for making moving contact with said arcuate resistive pattern;

(d) positioning said conductive means over said arranged substrata respectively;

(e) rotatably securing respectively each wiper element at said one end so that respective wiper element is electrically connected with said second conductive member, and said protuberance means is contiguous with and movable along said arcuate resistive pattern;

(f) securing said terminal pairs to said first and second conductive members respectively; and

(g) severing each of said terminal pairs and each of said wiper elements respectively where they are joined integrally with said conductive means.

5. A method for making a rheostat having a pair of terminals, one terminal being at one extremity of an arcuate resistive pattern, and a wiper element having one end electrically common with the other one of said terminal pair, the other end of said wiper element making moving contact with said arcuate resistive pattern to vary the ohmic magnitude presented across said terminal pair, said method comprising the steps of:

(a) preparing a dielectric substrate supporting said arcuate resistive pattern, said arcuate resistive pattern terminating at one end in a first conductive member, with a second conductive member at said electrically common point, and having a configuration including a first aperture concentric with a second aperture in said dielectric substrate and with said arcuate resistive pattern;

(b) positioning conductive means over said dielectric substrate, said conductive means having formed integral therewith said terminal pair and said wiper element, said wiper element having a third aperture concentric with said first and second apertures, and including a protuberance means adapted for contact with said arcuate resistive pattern;

(c) rotatably securing said wiper element through said first, second and third apertures so that said wiper element is electrically connected with said second conductive portion, and said protuberance means is contiguous with said arcuate resistive pattern;

(d) securing said terminal pair to said first and second conductive members respectively; and

(e) severing said terminal pair and said wiper element where they are joined integrally with said conductive means.

6. A method for making rheostats each rheostat comprising having a pair of terminals, one terminal being

at one extremity of an arcuate resistive pattern, and a wiper element having one end in electrically common union with the other one of said terminal pair, the other end of said wiper element making adjustable contact with said arcuate resistive pattern to vary the ohmic magnitude presented across said terminal pair, said method comprising the steps of:

(a) preparing dielectric substrata, each respective substrate supporting said arcuate resistive pattern, said arcuate resistive pattern terminating at one end in a first conductive member, with a second conductive member at said electrically common union, and having a configuration including a first aperture concentric with a second aperture in said respective dielectric substrate and with said arcuate resistive pattern;

(b) arranging said substrata with each respective dielectric substrate in tandem;

(c) preparing conductive means having formed integral therewith terminal pairs and wiper elements, each of said wiper elements having a third aperture concentric with said first and second apertures, and including a protuberance means adapted for contact with said arcuate resistive pattern;

(d) positioning said conductive means over said arranged substrata;

(e) rotatably securing respectively each wiper element to said respective dielectric substrate through said first, second and third apertures, so that each respective wiper element is electrically connected with said second conductive portion, and said protuberance means is contiguous with said arcuate resistive pattern;

(f) securing said terminal pairs to said first and second conductive members respectively; and

(g) severing each of said terminal pairs and each of said wiper elements where they are respectively joined integrally with said conductive means.

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