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J. KATZMAN

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FLAT TERMINAL ELEMENT FOR CONDENSER FOIL

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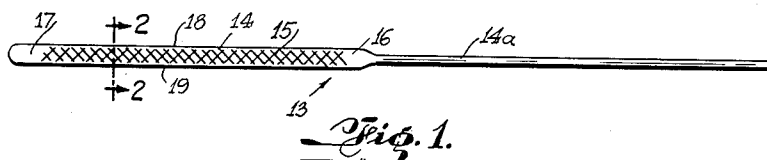


Fig. 1.

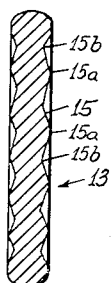


Fig. 2.

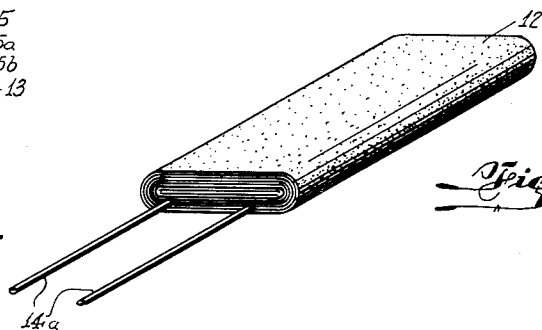


Fig. 3.

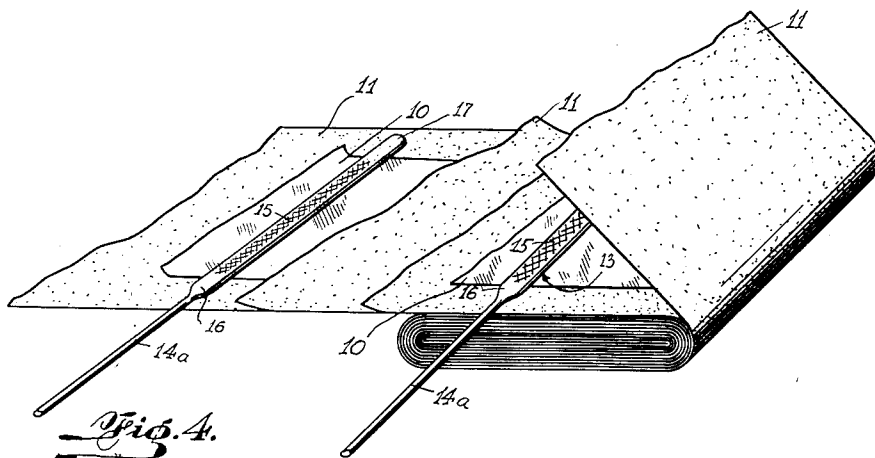


Fig. 4.

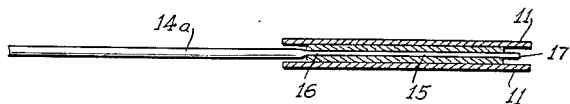


Fig. 5.

INVENTOR
JACOB KATZMAN.

BY
Maxwell E. Brown
ATTORNEY

UNITED STATES PATENT OFFICE

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FLAT TERMINAL ELEMENT FOR CONDENSER FOIL

Jacob Katzman, New York, N. Y.

Continuation of application Serial No. 564,013,
November 18, 1944. This application July 16,
1948, Serial No. 39,063

8 Claims. (Cl. 173—324)

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This invention relates generally to improvements in electrical condensers and more particularly includes improvement in terminal members applied to condensers. This application is a continuation of copending application Serial Number 564,013, filed November 18, 1944 (now abandoned).

In the manufacture of paper and foil condensers, it is the practice to wind or roll the paper and metal foil into a compact mass or unit, either leaving this unit in a cylindrical shape, or pressing it into a flat or other desirable shape.

The simplest form comprises rolling up two layers of metal foil with layers of paper therebetween serving as the dielectric. These condensers are impregnated with a suitable varnish or wax, or both.

In the manufacture of inductively wound condensers where the foil is narrower than the dielectric strip, it is the practice of applying flat smooth-surfaced terminal members to the metal foil layers by engaging a terminal member with each of the metal foil strips, the member being held against the foil layer merely by engagement therewith; and the terminal member being arranged such that it does not extend beyond both longitudinal edges of the foil.

It has been found, however, because of the smoothness of the opposed surfaces of the terminal member in contact with the foil, and no matter how tightly the roll would be wound, that the terminal member would either loosen and thus create a non-contemplated resistance in the circuit to which the condenser is applied or thus cause arcing between the terminal member and the foil; or the terminal member would slide out of the condenser unit, thus causing a break in the condenser circuit or, perhaps, causing a short circuit therein.

It has been further found that because of the fact that the inner end of the terminal member does not extend beyond the adjacent side or longitudinal edge of the foil, the said end of the terminal at times pierces the foil, thus rupturing the same during the manufacture of the condenser, and thereby impairing the efficiency of the latter.

It is, therefore, an object or purpose of the present invention to overcome the above-mentioned disadvantages by providing an electrical condenser wherein the terminal member frictionally engages the foil and extends lengthwise beyond the sides or longitudinal edges of the foil.

It is a further purpose of this invention to provide a terminal member having a roughened, knurled or serrated frictional gripping zone or area.

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A still further purpose of the present invention is to provide a condenser having a terminal member of such construction that each of the metal foils or plates of the condenser is embedded within the surface of the respective terminal member contacting the said foil.

It is a further object of the present invention to provide a condenser with a thin strip of metal constituting a plate, and a terminal member engaging said plate, the said member having a roughened zone and a smooth zone at each end of the roughened zone, the roughened zone being preferably slightly less in length than the width of the plate and being embedded therein, portions of the smooth zones engaging the plate, the peaks of the roughened zone and the smooth zones being preferably in the same plane, or the plane of the smooth zones being higher than the plane of the roughened zone.

A still further object or purpose of the present invention is to provide an electrical apparatus having a terminal and a relatively thin plate electrically connected to the terminal, the plate frictionally and embeddedly engaging an undulated zone or area of the terminal without being penetrated thereby.

Another object of the present invention is to provide a terminal member for an electrical apparatus, having an undulated, serrated or knurled area and smooth or flat zones or areas.

A still further object of the present invention is to provide a condenser in which the ends of the flat portion of the terminal member extend beyond the side edges of the foil.

Further objects and purposes of the invention will appear from the following disclosure thereof together with the attached drawing which illustrates a preferred form of embodiment thereof, and in which:

Fig. 1 is a plan view of an electrical terminal member made in accordance with the invention;

Fig. 2 is an enlarged sectional view taken through line 2—2 of Fig. 1;

Fig. 3 is a perspective view of an electrical condenser embodying the invention;

Fig. 4 is a perspective view of a portion of an electrical condenser (partially unrolled) utilizing terminal members made in accordance with the invention; and

Fig. 5 is a sectional view of the condenser embodying the invention.

Referring now more particularly to the drawing, there is disclosed by way of example a condenser having the conductive sheets or metal foil 10 and the dielectric sheets 11 which are usually paper. The terminal member 13 comprises the foil or plate contacting section 14 and the section

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14a which is employed for connecting the condenser in a circuit. The section 14 of member 13 has a roughened or undulated zone or area 15 which may be produced by serrating or knurling this area, providing raised portions 15a and depressed portions 15b. The roughened zone or area 15 terminates at the ends in the smooth flat zones 16, 17 and may be surrounded by a smooth flat marginal frame comprising the flat end areas 16, 17, and the lateral areas 18, 19. The peaks of the raised portions 15a preferably do not extend beyond the plane or surface of the areas 16, 17 as indicated in Fig. 2.

When the terminal member 13 is placed in position between a sheet of paper 11 and a sheet of metal foil 10 and the condenser is tightly wrapped, part of the metal foil engaging the terminal member will become embedded in the roughened zone or area 15 of the terminal member, and adjacent parts of the said metal foil may frictionally engage the smooth areas 16, 17, although not necessarily so.

It is clearly seen according to Fig. 5, that the ends of the terminal member extend beyond the side edges of the metal foil, so that penetration of the foil by the ends of the flat portion is made impossible, during and after manufacture and the forming of the condenser.

It will thus be seen that there has been provided by this invention an electrical device in which the various objects hereinabove set forth, together with many thoroughly practical advantages are successfully achieved. It is to be understood that the matter hereinabove set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to be secured by Letters Patent, is:

1. In an electrical condenser a strip of metal foil and a terminal member engaging said foil, said member having a pitted zone frictionally engaging a portion of said foil and a smooth zone adjacent said pitted zone engaging said foil, the peaks of said pitted zone and said smooth zone being in the same plane.

2. In a condenser, a thin strip of metal constituting a plate, and a terminal member engaging said plate, said member having a roughened zone and a smooth zone at each end of said roughened zone, said roughened zone being slightly less in length than the width of said plate and being embedded therein, portions of said smooth zones engaging said plate, the peaks of said roughened zone and said smooth zones being in the same plane.

3. In a condenser a thin strip of metal constituting a plate, and a terminal member engaging said strip, said member having a roughened zone embedded in a portion of said plate and a smooth zone contiguous to said roughened zone engaging another portion of said plate, said roughened zone being surrounded by said smooth zone, the peaks of said roughened zone and said contiguous zone being in the same plane.

4. In an electrical condenser a strip of metal foil and a terminal member engaging said foil, said member having a pitted zone frictionally engaging a portion of said foil and a smooth

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zone surrounding said pitted zone engaging other portions of said foil, the peaks of said pitted zone and said smooth zone being in the same plane.

5. An electrical terminal member comprising a section adapted to engage a plate and a connecting section, said plate engaging section having a roughened zone for frictionally engaging a portion of said plate and flat smooth zones surrounding said roughened zone and adapted to contact other portions of said plate, the peaks of said roughened zone and said surrounding zones being in the same plane.

6. An electrical terminal member for a condenser of the type in which conductive foils are separated by dielectric strips, said terminal member comprising a conductor of round cross-section terminating in a flat piece of metal provided on its face with a zone having a roughened surface formed by a multitude of peaks and with two smooth, protective zones adjoining said roughened surface on opposite sides, said roughened zone and at least part of each of said protective zones being positioned to make contact with an adjacent conductive foil when the terminal member is inserted into the condenser, none of the peaks of said roughened surface projecting beyond the plane of said protective zones.

7. An electric terminal member for a condenser of the type in which conductive foils are separated by dielectric strips, said terminal member comprising an elongated conductor of round cross-section terminating in an integral flat metal bar provided on its face with two longitudinally spaced smooth, protective zones and a roughened surface formed by a plurality of peaks between said protective zones, the spacing between said protective zones being less than the width of a condenser foil, none of the peaks of said roughened surface projecting beyond the plane of said protective zones.

8. An electric terminal member for a condenser of the type in which conductive foils are separated by dielectric strips, said terminal member comprising an elongated conductor of round cross-section terminating in an integral flat metal bar provided on each face with two longitudinally spaced smooth, protective zones and a roughened surface formed by a plurality of peaks located between said protective zones, the spacing between said protective zones being less than the width of a condenser foil, none of the peaks of said roughened surface projecting beyond the plane of the adjacent protective zones

JACOB KATZMAN.

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