

June 14, 1938.

J. V. DOMALESKI
ELECTRICAL CONTACT MEMBER

2,120,396

Filed June 4, 1936

2 Sheets-Sheet 1

FIG. 1

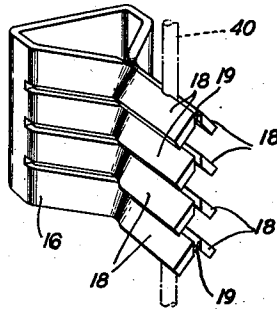


FIG. 2

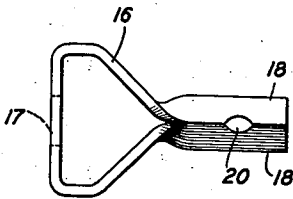


FIG. 3

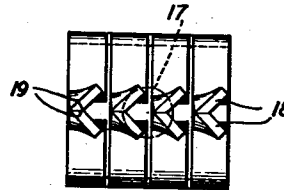


FIG. 4

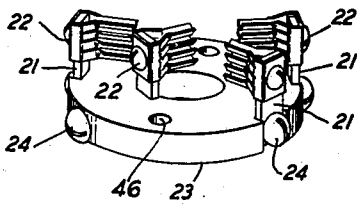
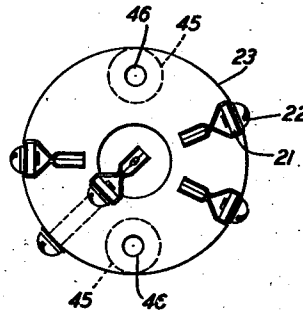


FIG. 5



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FIG. 6

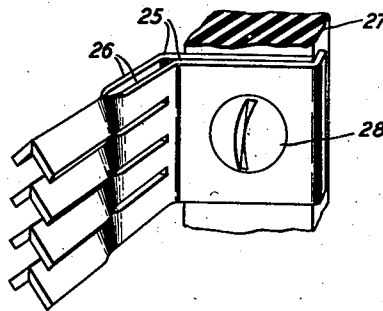


FIG. 7

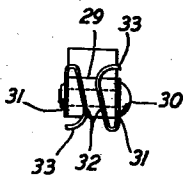


FIG. 8

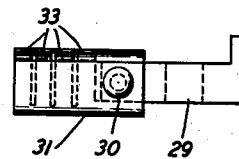


FIG. 9

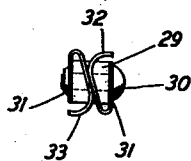
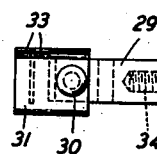


FIG. 10



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12 Claims. (Cl. 173-332)

This invention relates to electrical contact members and more particularly to contact clips for establishing electrical connections with electrical apparatus, such as electron discharge devices operable at ultra-high frequencies.

One object of this invention is to enable an efficient electrical connection to terminal members on electrical apparatus.

Another object of this invention is to expedite and facilitate the establishment of electrical connections with electrical apparatus.

A further object of this invention is to assure positive and secure association between a terminal on electrical apparatus and a contact member therefor.

In one illustrative embodiment of this invention, a contact member comprises a pair of juxtaposed metallic strips or arms each of which is divided longitudinally into a plurality of resilient fingers. The arms may be formed in one piece or of separate pieces of strip material.

In accordance with one feature of this invention one or more of the resilient fingers is twisted about its longitudinal axis so that corresponding fingers on the juxtaposed arms are disposed at an angle, for example, 90 degrees, to one another and thereby form V-shaped channels for guiding a terminal member inserted between the arms. Corresponding fingers may have contacting edges at the apex of the angle formed thereby so that a wiping engagement between the terminal member and the fingers obtains when the terminal member is associated with the contact member and an efficient and positive electrical connection results.

In order to assure accurate positioning and secure holding of the terminal member, one or more pairs of the corresponding fingers on the two arms may be provided with juxtaposed slots or recesses for accommodating the terminal member.

In one application a plurality of contact members may be mounted edgewise upon a suitable insulating base or support and positioned to receive terminal members or prongs extending from an electrical apparatus such, for example, as an electron discharge device.

The invention and the features thereof will be understood more clearly and fully from the following detailed description with reference to the accompanying drawings in which;

Fig. 1 is a perspective view of a one-piece contact clip illustrative of one embodiment of this invention;

Fig. 2 is a top view of the contact clip shown

in Fig. 1 illustrating clearly the relative position of the fingers and the juxtaposed slots or recesses therein;

Fig. 3 is a front end view of the contact clip illustrated in Fig. 1 showing the angular relation of corresponding fingers;

Figs. 4 and 5 are perspective and plan views, respectively, of a mounting for electron discharge devices, including contact members constructed in accordance with this invention;

Fig. 6 is a perspective view of another contact member constructed in accordance with this invention wherein the cooperating arms may be separately fabricated;

Figs. 7 and 8 are top and side views, respectively, of another contact member illustrative of this invention, which is particularly suitable for installations wherein insertion of a terminal member in either of two directions is desired, and

Figs. 9 and 10 are top and side views, respectively, of a modification of the contact member illustrated in Figs. 7 and 8.

Referring now to the drawings the contact clip shown in Figs. 1, 2 and 3 comprises a single piece of suitable metal, for example, a beryllium copper alloy, which may be cadmium plated, having parallel juxtaposed arms and an intermediate bowed portion 16. The intermediate portion 16 may be provided with an aperture 17 for receiving a suitable mounting screw or the like. Each of the arms is divided by longitudinal slits to provide a plurality of pairs of corresponding resilient fingers 18.

As shown clearly in Fig. 3, each of the fingers 18 is twisted about a longitudinal axis, for example, through an angle of substantially 45 degrees, so that corresponding fingers on the two arms form a V or wedge-shaped channel for guiding a terminal member, such as a terminal prong or pin 40, upon its insertion between the arms of the contact clip. The juxtaposed edges 19 of corresponding fingers may be shaped, as shown in Fig. 3, to provide a linear contact surface therebetween at the apex of the channel formed by the corresponding fingers.

As illustrated clearly in Fig. 2, the several fingers 18 may be provided with slots or recesses 20, which may be arcuate as shown, the slots or recesses on corresponding fingers being in juxtaposition and the slots or recesses in the several fingers of each arm being in alignment.

When a terminal member, such as a prong or pin 40, is inserted between the arms of the contact clip, it will be apparent that it will be guided between successive corresponding fingers by vir-

tue of the V or wedge-shaped channels formed by the fingers and that wiping engagement between the fingers and the terminal will obtain. As a result of such engagement, foreign matter
 5 that may be present upon the terminal will be removed and a low resistance contact between the terminal and contact clip will be established. Furthermore, because of the resiliency and disposition of the fingers and the slots or recesses
 10 20, the terminal member will be securely held in proper position in the contact clip.

The contact clips may be utilized advantageously in a mounting for electron discharge devices. In one illustrative mounting shown in
 15 Figs. 4 and 5, several contact clips of the design shown in Figs. 1 to 3 are secured to rigid uprights 21 by nuts and bolts 22, the uprights in turn being secured to a base 23, for example, of a ceramic material, by screws 24 and positioned in peripheral grooves or recesses in the base. The several
 20 contact clips are spaced, of course, in the same relation as the terminal prongs upon the electron discharge device, each of the clips being adapted to receive one of the terminal prongs in the recesses or slots 20. The base 23 may be provided
 25 with hubs 45 and apertures 46 to allow attachment thereof to a suitable mounting.

In another illustrative embodiment of this invention shown in Fig. 6, a contact clip may be
 30 formed of two separate metallic strips. Each of the strips includes an apertured mounting portion 25 and an arm 26 composed of a plurality of twisted fingers. The two strips may be secured to a suitable support 27 by a screw 28, with corresponding fingers of the arms 26 contacting and
 35 forming V or wedge-shaped guiding channels for a terminal wire or the like.

In some installations, it is desirable that a contact clip allow insertion of a terminal wire or
 40 prong in different directions. A terminal particularly suitable for such installations is shown in Figs. 7 and 8 and comprises a metallic mounting member or block 29 to which a pair of metallic contact strips are secured, as by an escutcheon
 45 pin 30. Each of the contact strips includes a mounting portion 31 apertured to allow passage of the pin 30 therethrough and an arm portion 32 terminating in an outwardly curved guide lip 33, the lips on the two strips extending in opposite
 50 directions. Each arm portion 32 is divided into a plurality of resilient fingers by suitable slots. If desired, these fingers may be twisted similarly to the fingers in the contact clips shown in Figs. 1 and 6 to obtain edgewise contact therebetween
 55 and a terminal member to be grasped by the contact clip.

As shown in Figs. 9 and 10, the fingers on the arm portions 32 may be in contact throughout a portion of their length and the mounting member or block may be provided with a tap 34 into
 60 which a lead conductor may be threaded.

Although several specific embodiments of the invention have been shown and described, it will be understood, of course, that various modifications may be made therein without departing
 65 from the scope and spirit of this invention as defined in the appended claims.

What is claimed is:

1. A contact member comprising a pair of

elongated, linear juxtaposed fingers having substantially parallel longitudinal axes, one of said fingers having a terminal engaging portion twisted about the longitudinal axis thereof and defining with the other of said fingers an elongated channel extending longitudinally of said fingers.

2. An electrical contact member comprising a pair of juxtaposed metallic arms each divided into a plurality of resilient fingers, the fingers on
 10 one of said arms being twisted toward the other arm and disposed substantially parallel to one another.

3. An electrical contact member comprising a pair of juxtaposed metallic arms, one of said
 15 arms having a plurality of superposed, substantially parallel resilient fingers each disposed obliquely toward the other arm.

4. An electrical contact member comprising a pair of juxtaposed, plane, elongated resilient
 20 fingers having contacting longitudinal edges and defining a substantially V-shaped channel.

5. An electrical contact member comprising a pair of elongated, linear, resilient metallic fingers having contacting longitudinal edges and disposed
 25 at an angle to each other.

6. An electrical contact member comprising a pair of arms, said arms including juxtaposed resilient fingers and portions intermediate the ends of said fingers and at a longitudinal edge
 30 thereof for guiding a terminal therebetween.

7. An electrical contact member comprising a pair of juxtaposed arms divided into an equal number of superposed fingers, corresponding fingers on said arms being disposed at an angle
 35 to each other and having longitudinal contacting edges.

8. An electrical contact clip comprising a pair of metallic arms having a plurality of juxtaposed corresponding fingers extending longitudinally
 40 of said arms, each pair of corresponding fingers having contacting longitudinal edges and disposed at substantially right angles to each other, and the fingers of each arm being in superposed relation.

9. An electrical contact clip comprising a metallic strip having a pair of adjacent arms and a mounting portion connecting said arms, one of
 45 said arms including a plurality of fingers extending longitudinally of said one arm and disposed laterally oblique to and longitudinally parallel with the other arm.

10. An electrical contact clip comprising a metallic strip having a pair of adjacent arms divided into a plurality of parallel resilient fingers, and a bowed portion connecting said arms, the fingers
 50 on each of said arms extending at substantially right angles to the base of said bowed portion and being disposed at an oblique angle to the other arm.

11. An electrical contact clip in accordance with claim 10 wherein corresponding fingers on said arms have contacting longitudinal edges.

12. An electrical contact clip comprising a pair of adjacent arms divided into resilient fingers, corresponding fingers of said arms being disposed
 65 at an angle to each other and having centering slots in juxtaposed longitudinal edges thereof.

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