April 12, 1932. N. N. OKUN 1,853,173

ELECTRIC CONNECTING DEVICE

Filed June 4, 1929 2 Sheets-Sheet 1

Fig. 1.

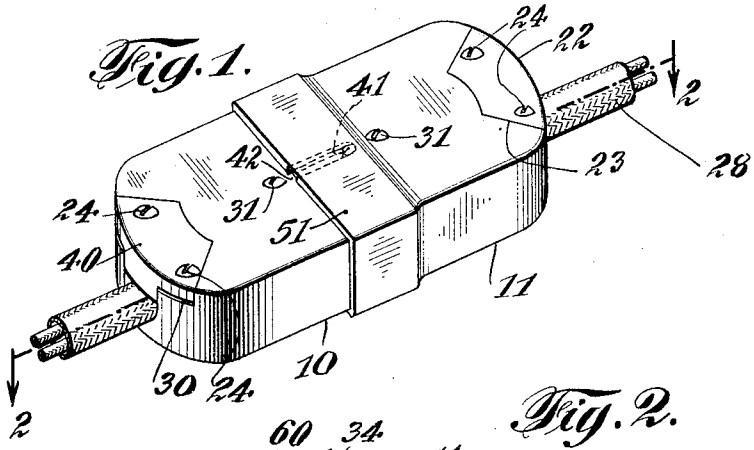


Fig. 2.

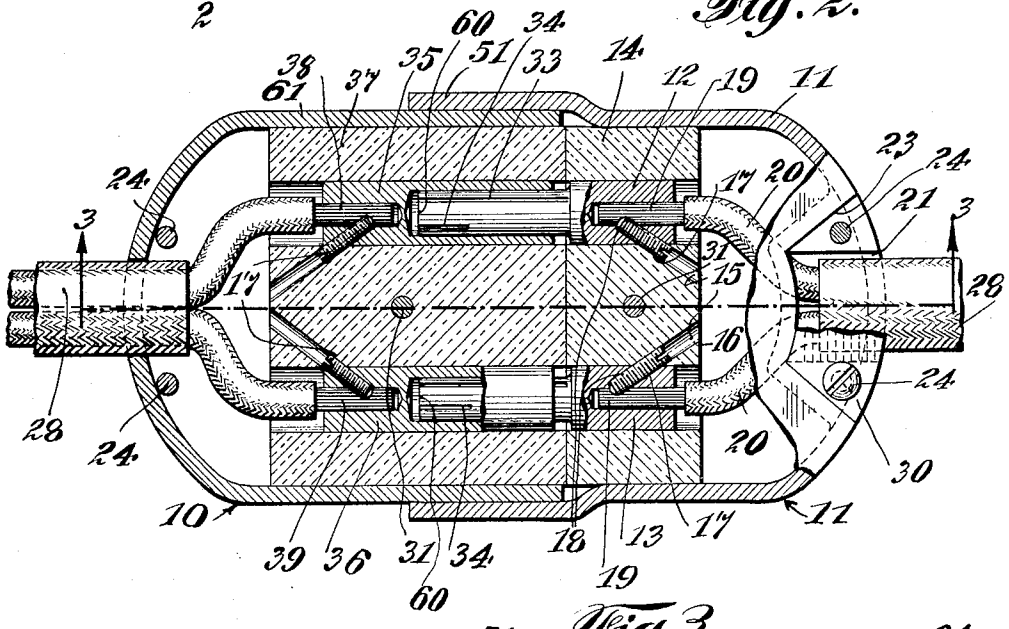
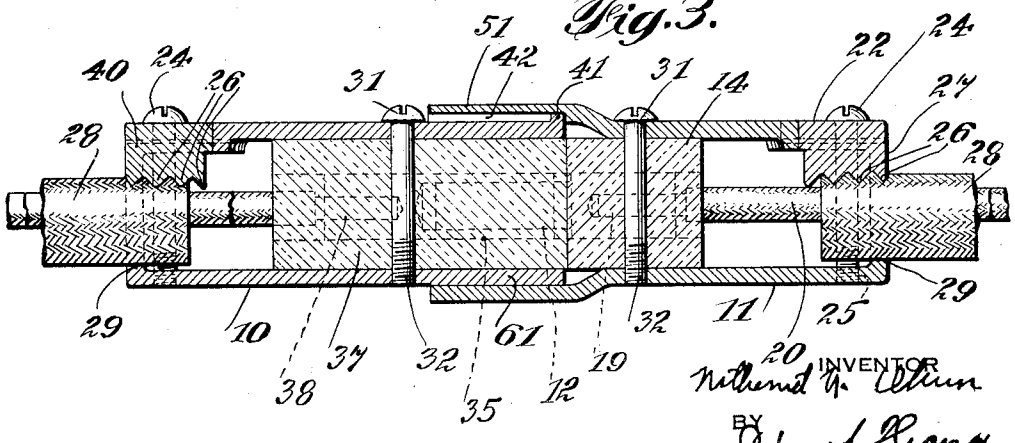


Fig. 3.



INVENTOR

Nathaniel N. Okun

BY

Edward Rhame

ATTORNEY

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Fig. 4.

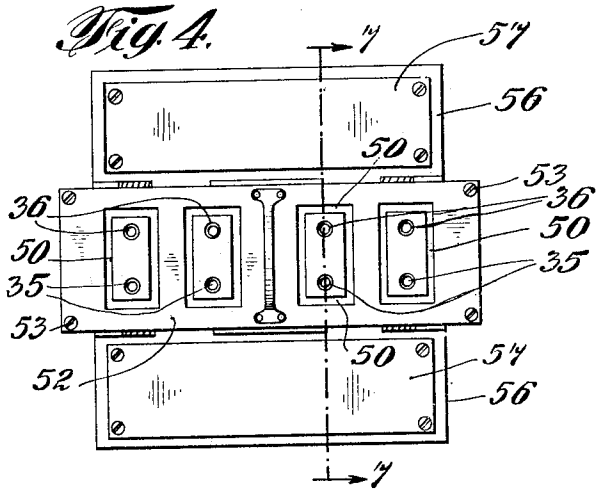


Fig. 5.

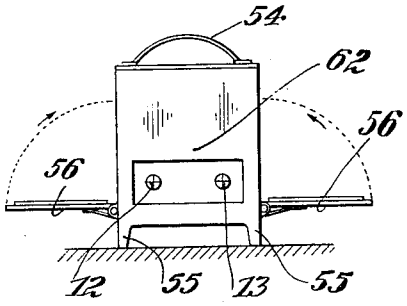


Fig. 6.

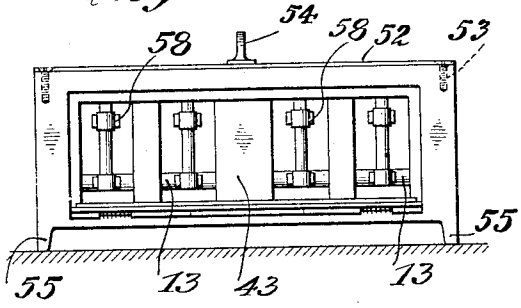


Fig. 7.

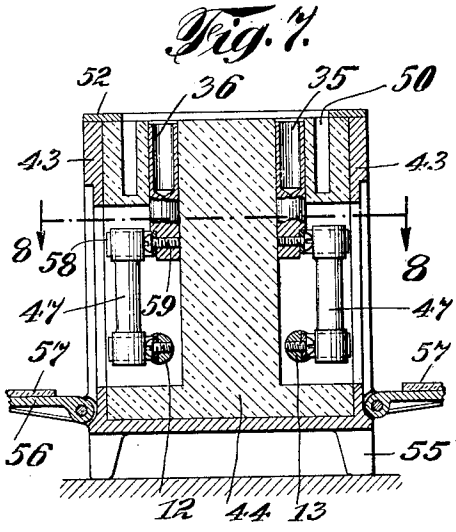
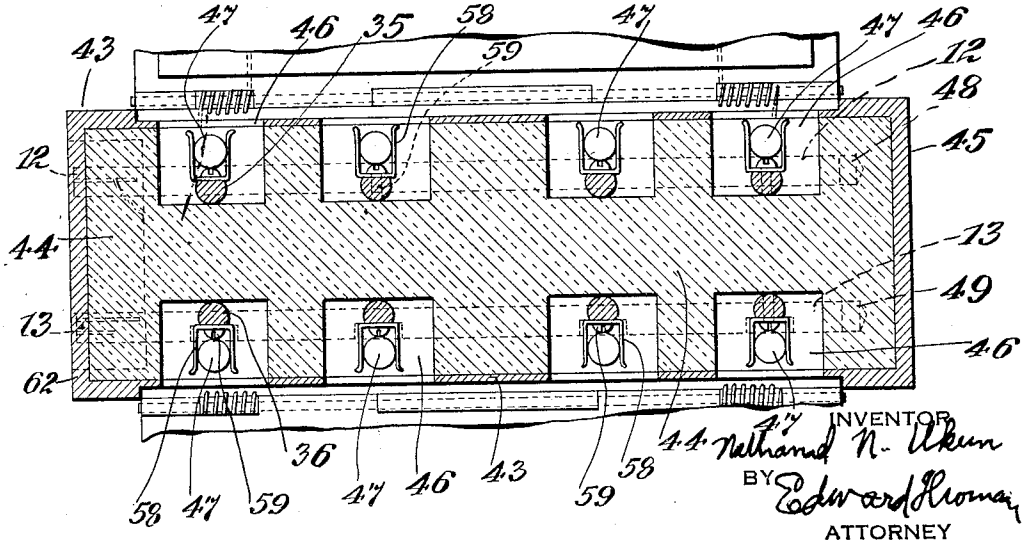


Fig. 8.



INVENTOR
Nathaniel N. Okun
BY Edward Thomas
ATTORNEY

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UNITED STATES PATENT OFFICE

NATHANIEL N. OKUN, OF NEW YORK, N. Y.

ELECTRIC CONNECTING DEVICE

Application filed June 4, 1929. Serial No. 368,383.

This invention relates to electric connecting devices and is herein disclosed as embodied in a plug and as embodied in a fuse box.

Plugs and fuse boxes, especially plugs, have proven extremely unsatisfactory in the past because they were usually made of a body material containing an organic binder and were often brittle, with the result that the plug often became broken and was easily damaged in soldering or when an arm formed across the open terminals of the plug. Analogous troubles have arisen in fuse boxes which were not primarily metal boxes, and the metal boxes were open to other objections.

According to the present invention the electric terminals for establishing connections may be embodied in an inorganic or fireproof body which may be molded around them and the body may be surrounded by a metal casing. The body is usually advantageously molded in the stamped or die-cast metal casing, and the electric terminals themselves are thus held in place in the casing by the molded material.

According to the present invention the casings and the contained insulating body are so proportioned that neither metal casing can short-circuit the terminals in the other casing.

To take the strain of a cable off the terminal members the cable may be gripped by easily set teeth which are mounted on or form part of the metal casing.

Since the body of the device is incombustible and fire proof, it is well adapted to serve as the partitions of a fuse box which may be constructed in many respects like the plug which has just been referred to. Other advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a perspective view of a plug embodying my device.

Figure 2 is a sectional plan view of the same.

Figure 3 is a vertical sectional view of the same.

Figure 4 is a top view of a fuse box embodying my invention.

Figure 5 is an end view of the same.

Figure 6 is a front view of the same.

Figure 7 is a transverse sectional view on the line 7—7 of Figure 4.

Figure 8 is a sectional plan view on the line 8—8 of Figure 7.

The plug shown in Figure 1 consists of male covering member 10 and a female covering member 11, which may be made of die-cast metal such as aluminum or of stampings. Within the member 11 are the male or pin terminals 12 and 13, which may be placed in position and held in position in the covering member 11 while a supporting body 14 is made by molding in place around the terminals 12 and 13 a moldable material, such as transsite asbestos or the fire proof refractory material cetec. The molding is done in such a way as to leave diagonal openings 15 extending from the cable end 16 of the body 14 through which set screws 17 may be later inserted, screwing through openings 18 in the members 12 and 13. The set screws 17 are thus enabled to grip the bare ends 19 of conductors 20 and hold them firmly against displacement in the members 12 and 13 respectively.

In order to further take any strain from the cable off the molded member 14 the cable or cables pass out through an opening 21 in the end of the casing 11, said opening being provided with a cover 22, which is adapted to be held down in a cut away portion 23 of the casing 11 by screws 24 which are threaded in the far-side of the casing as shown at 25. The cover 22 is provided with one or more corrugations or longitudinal teeth 26 on its turned-down face 27 so that the cable or cables 28 are gripped by the teeth 26 and pressed against the far-side up-turned edge 29 of the casing. The member 22 may lie flush with the face of the casing 11 and be drawn by the screws against a rabbeted edge 30 of the casing so that it is firmly held in place without any possibility of screwing up the screws 24 sufficiently to cut the cable by the teeth 26.

A screw 31 may pass through the center of the molded block 14 thus holding it firmly in place because its head lies on one face of the casing 11 and it is threaded at 32 into the opposite face of the casing.

It has been found satisfactory to make the male members 12 and 13 of solid Tobin-bronze with a sawed slot 33 extending longitudinally of each member through its free part and a short sawed slot 34 about half that length extending at right angles to the slot 33. Made in this way with a bevelled head each male member 12 and 13 is adapted to fit and make an excellent contact with the corresponding female members 35 and 36, which may be made of brass and bored so that the members 12 and 13 extend into the bores 35 and 36 nearly as far as the bottom of the long slots 33. The female members 35 and 36 are held in place by a molded body 37, like the molded body 14 and hold conductors 38 and 39 by set screws 17 mounted like the first set screws 17.

There is also provided a screw 31 extending through the molded member 37 and a cap 40 having teeth 26 like the cap 22 and similarly held in place. In order to insure correct polarity of the terminals there may be provided a pin 41 on the male member 10, which is adapted to fit into a groove 42 in the female member 11 when the terminals are properly locked against each other. The ungrooved end of the opposite end of the opposite side of the casing 11 will prevent wrong assembling of the parts.

The fuse box shown in Figure 4 is similarly built, having male terminals 12 and 13 extending out into a bay within the casing 43 of the fuse box. The casing 43 may be die-cast or stamped metal and contain a molded mass or body 44 precisely like the body 14, with the result that the terminals 12 and 13 project beyond the body 44, but lie within the casing 43. The terminals 12 and 13 as shown in Figure 8 extend longitudinally of the box 43 within the molded material 44 nearly to its further end 45, crossing bays 46 in the molded material so arranged that each bay provides an opening or shelter for a fuse 47 standing vertically in the box and forming a connection from the extension 48 or 49 as the case may be of the terminal 12 or 13 to a female member 35 or 36 also embedded in the molded mass 44 and open almost flush with the top of the box.

As herein illustrated the fuse box terminals 35 and 36 are adapted to receive the male members shown in Figure 2 and for this purpose there is provided in the top of the fuse box a notch 50 to accommodate the projecting end or skirt 51 of the casing 11. The structure is such as clearly shown in Figures 4 and 7 that each pair of terminals 35 and 36 lie across the top of the fuse box ready to receive a plug with a casing 11 at any one of the four pairs of terminals 35 and 36 shown in said figures.

The top of the fuse box may be a metal plate 52 held by removable screws 53 to the metal walls 43 of the casing and may be provided with a handle 54 for easily carrying it and with legs 55 on which it may rest. The fuse box is also shown as provided with spring-closed doors 56, one on each side adapted to lie over the bays containing the fuses and provided with an internal facing 57 of asbestos or other incombustible material so that the fuses each lie in a bay completely inclosed. The fuse devices 47 as shown are mounted in the usual clips 58 held by the usual screws 59 to the terminals 35 and 36.

The skirt 51 as clearly shown in Figure 2 extends to at least slightly beyond the plane of the ends 60 of the male members 12 and 13 with the result that the closely fitting male part of the casing 10 cannot short-circuit the terminal members 12 and 13 by its metal covering because it has to be inserted substantially in a straight line into the female member 11 when uniting the parts of the plug. To make this protection very effective the thickness of the skirt 51 should be greater than that of very thin stamped metal. For similar reason it is impossible to short-circuit the terminal members 12 and 13 in Figure 8 when inserting the terminals 35 and 36 upon them because the wall 61 of the casing 10 fits closely against the internal wall 62 of the bay in which the members 12 and 13 lie in Figure 8.

Having thus described certain embodiments of my invention, what I claim is:

1. An electric terminal device having a metallic casing, an incombustible supporting member in said casing, terminals having projecting free ends mounted in the member, set screws screwing into openings in the terminals to hold the ends of conductors therein, a cover at the back of the casing adapted to be removed and also adapted to hold said conductors, and a skirt on said casing adapted to protect the free ends of the terminals.

2. An electric terminal device having a member with projecting pin terminals, a metal casing for said terminals having a skirt projecting at least to the plane of their ends, an insulating body in the casing supporting the terminals, a fuse lying in a bay in said body and connected to one of said first terminals, a third terminal connected to said fuse, a member having terminals adapted to cooperate with said first terminals and having a metal casing to cooperate with said casing and engage the skirt and an insulating body in the second casing substantially coming to the surface thereof in which the second terminals are imbedded so they do not project therefrom but are adapted to be engaged by terminals like the first terminals.

3. An electric terminal device having a metallic casing, an incombustible supporting member in said casing, terminals having projecting free ends mounted in the member, set screws screwing into openings in the terminals to hold the ends of conductors therein,

a cover at the back of the casing adapted to be removed and also adapted to hold said conductors, a skirt on the casing adapted to protect the free ends of the terminals, a second terminal device having open terminals to receive said projecting free ends, a second skirt on the second terminal device, and a member on said second skirt adapted to cooperate with a depression in the first skirt to permit the free ends to enter the open terminals when brought together in one position and to strike the second skirt and prevent the free ends from entering the open terminals in reverse position.

NATHANIEL N. OKUN.