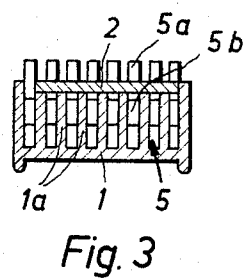
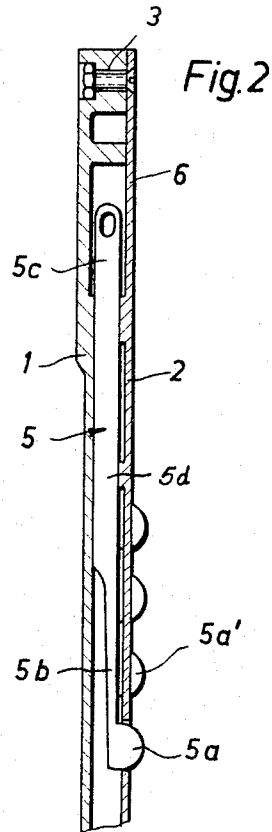
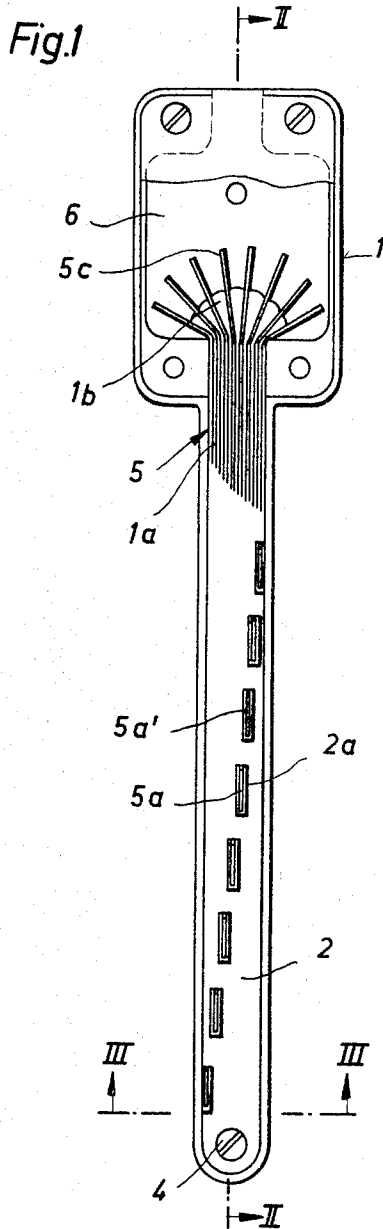


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FLAT-TYPE PLUG FOR USE WITH SOLDERING TAG
STRIPS IN TELECOMMUNICATION TECHNIQUE
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FLAT-TYPE PLUG FOR USE WITH SOLDERING TAG STRIPS IN TELECOMMUNICATION TECHNIQUE**Heinz Krone, Asperg, Wurttemberg, Germany, assignor to Krone G.m.b.H., Ludwigsburg, Wurttemberg, Germany, a German company**

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K 51,317

3 Claims. (Cl. 339—176)

The invention relates to a flat-type plug for use in solder terminal strips such as, for example in telecommunication techniques.

These flat-types plugs are used to tap the solder tags of solder terminal strips. The plugs are inserted between two adjacent solder tag rows of a solder terminal strip. One side of the plug housing normally serves as a guide, while on the other broad side, the contact ends whose purpose is to establish the contact with the solder tags of the solder terminal strip, project beyond the housing of the plug.

In known plugs such as disclosed in British Patent No. 475,001, the problem of imparting to the springs substantially the same spring characteristics has been appreciated but in such assemblage, those springs whose contact ends lie adjacent the clamping point are bent and such an arrangement is undesirable due to the relatively great thickness of the housing which is necessitated by this particular spring construction.

An object of this invention is to provide a flat-type plug for use in solder terminal strips which permits the accommodation of greater number of leaf springs while retaining the same dimensions of the plug.

Accordingly, this invention comprehends a flat-type plug for use in solder terminal strips comprising a plurality of leaf springs arranged longitudinally of the plug and having contact ends adapted to establish contact with the solder tags of the solder terminal strip and arranged in echelon formation on one broad side of the plug, the distance between the contact ends in the longitudinal direction corresponding to the distance between solder tag rows of the terminal strip, the leaf springs lying in planes perpendicular to the broad side of the plug and the contact ends being carried by portions of the leaf springs having a reduced width compared to the remainder of the leaf spring.

While retaining the slight breadth of the flat-type plug, which is dictated by the division of a solder terminal strip, the plug permits the number of contact springs that can be accommodated in the plug housing to be increased. By reducing the width of those parts of the leaf springs which carry the contact ends, the leaf springs are made resilient edgewise.

In an example of the invention, the plug housing consists of a substantially channel-shaped lower section provided with longitudinal ribs for the insulation of adjacent springs, and a cover plate provided with openings for the contact ends.

The ribs perform the function of the insulating separators required in the known flat-type plugs, thus effecting a reduction in the number of individual parts and thereby also rendering the assembly appreciably easier.

Desirably the width of the leaf springs may be less than the height of the ribs and in this way the creep path between adjacent leaf springs is increased.

In order to obtain uniform spring tension in all the springs despite the differences in total length of the leaf springs accommodated in one plug housing it is desirable for those parts of all the springs which have a reduced width to be of the same length.

In a plug in which the broadened handle-end contains a connection chamber into which project the ends of the leaf springs adapted for connection to leads, it has proved advantageous, for accurately securing the ends of the leaf springs in position, that the ribs of the lower section of the housing be widened to form sectors in the area of the connection chamber, between which the ends of the leaf springs are arranged fanwise.

These and other details of the invention will become apparent from the following description of an embodiment taken by way of example with reference to the accompanying drawings, in which:

FIGURE 1 is a plan view (with cutaway cover plate) of a flat-type plug according to the invention;

FIGURE 2 is a partial section taken along line II—II of FIGURE 1; and

FIGURE 3 is a section taken along line III—III of FIGURE 1.

The housing of the flat-type plug shown consists essentially of a substantially channel-shaped lower section 1 and a cover plate 2 fixed to the lower section by means of screws 3 and 4.

The lower section 1 of the housing is provided with ribs 1a extending longitudinally of the plug and flat contact springs 5 are arranged between the ribs 1a. The flat contact springs 5 include opposite ends 5a and 5c and shank portion 5d and lie in planes perpendicular to the broad side of the plug i.e. the springs are side-edge on to the broad side of the plugs. The end 5a of each spring carries a contact which projects through a corresponding opening 2a, in cover plate 2.

The portion or member 5b of leaf springs 5, which carries the contact end 5a, is of reduced width as shown in FIGURE 2 to enable the lower part of the leaf springs 5 to be resilient in an edgewise direction.

The width of the shank portion 5d leaf springs 5, which are arranged on edge, is less than the height of the ribs 1a of the lower section 1 as can be seen in FIGURE 3 with the result that the creep path between adjacent contact springs 5 is increased.

The upper end of the lower section 1 is broadened to define a handle and contains a connection chamber 6 in which the connecting leads (not shown) of the plug are connected with upper ends 5c, designed as solder tabs, of the contact springs 5.

In order to secure accurately in position the ends 5c of the contact springs 5 in the connection chamber 6, ribs 1a are widened in the region of the connection chamber 6 to form sectors 1b, between which the ends 5c of the leaf springs are arranged fanwise.

The shank portions of the individual leaf springs 5 arranged next to one another, are of different or equal lengths, with the result that the contact ends (e.g. 5a, 5a') lie one above the other in echelon formation, spaced according to the intervals between the superposed solder tags of a solder terminal strip.

FIGURE 1 reveals clearly that by this arrangement of leaf springs 5 vertical to the broad side of the plug housing, a great number of contact springs can be accommodated while retaining the plug dimensions dictated by the solder terminal strip.

It is understood that various changes and modifications may be made in the embodiment of the invention illustrated and described herein without departing from the scope of the invention as defined by the following claims.

What I claim is:

1. A flat-type plug for use in solder terminal strips comprising an elongated flat housing, a handle portion at one end of said housing having a connection chamber therein, a plurality of leaf springs arranged within and extending longitudinally of said flat housing, each spring

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having a shank portion and opposite ends with said shank portions and ends lying in planes perpendicular to a broad side of said housing and said shank portions being of different lengths, one end of each spring projecting into said connection chamber for connection to leads of the plug, each spring intermediate the shank portion and the opposite end having a portion of reduced width, a contact for said opposite end, and said portions of reduced width being of uniform length whereby said contacts lie in echelon formation and project through openings in the broad side of the housing.

2. A flat-type plug for use in solder terminal strips comprising an elongated channel-shaped lower section, a handle portion for one end of said lower section having a connection chamber therein, ribs extending longitudinally of said lower section dividing the interior thereof into a plurality of parallel compartments, a leaf spring arranged in and extending longitudinally of each compartment, each spring having a shank portion and opposite ends with said shank portion and ends lying in planes perpendicular to the base of said lower section and said shank portions being of different lengths, one end of each spring projecting into said connection cham-

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ber for connection to leads of the plug, each spring intermediate the shank portion and the opposite end having a portion of reduced width with said portions of reduced width being of uniform length, a contact for the opposite end of each spring with said contacts lying in echelon formation, and a cover plate for said lower section and handle portion provided with openings through which said contacts project.

3. The flat-type plug as claimed in claim 2 in which the width of the shank portion of each spring is less than the height of said ribs whereby the creep path between adjacent springs is increased.

References Cited by the Examiner

UNITED STATES PATENTS

2,696,535	12/1954	McLean et al.	339—193
3,107,319	10/1963	Vizzier	339—17

FOREIGN PATENTS

475,001	11/1937	Great Britain.
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