June 18, 1946. G. E. FITZGERALD 2,402,491

FUSE CLIPS

Filed June 10, 1944

Fig. 1.

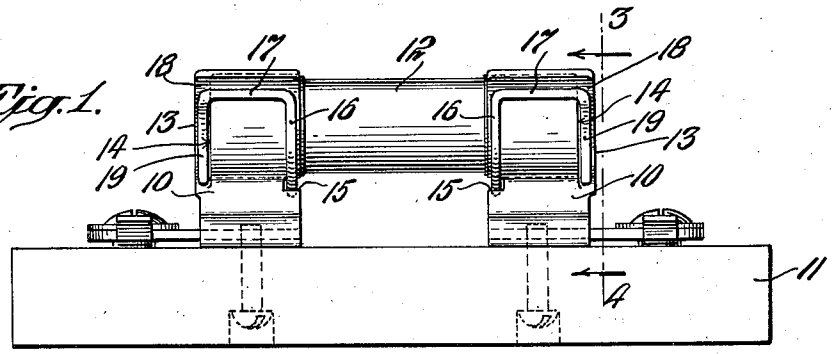


Fig. 2.

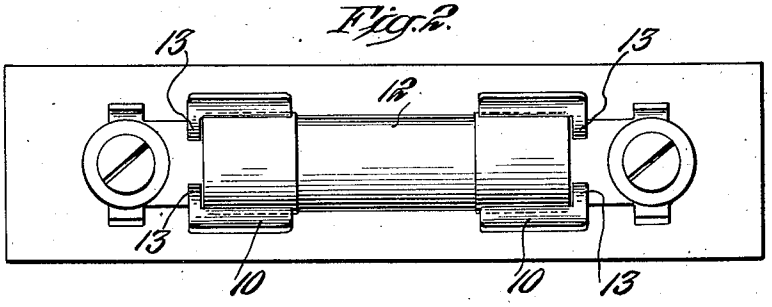


Fig. 5.

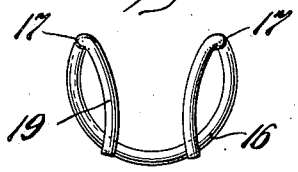


Fig. 4.

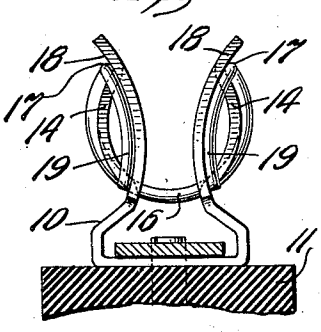


Fig. 3.

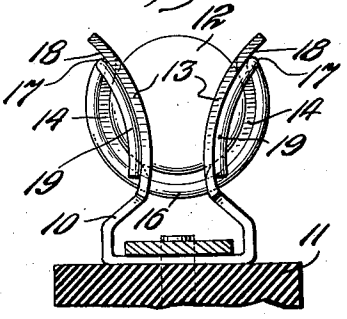


Fig. 6.

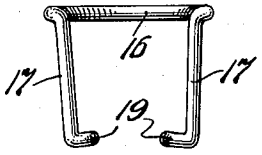
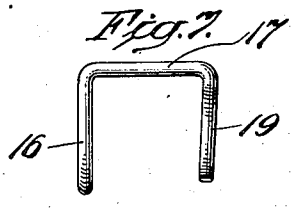


Fig. 7.



INVENTOR.
GEORGE E. FITZGERALD
BY
Philip S. McKee
ATTORNEY.

Patented June 18, 1946 2,402,491

UNITED STATES PATENT OFFICE

2,402,491

FUSE CLIP

George E. Fitzgerald, Stratford, Conn., assignor to The Connecticut Electric Manufacturing Company, Bantam, Conn., a corporation of Connecticut

Application June 10, 1944, Serial No. 539,755

1 Claim. (Cl. 200—134)

1

The invention herein disclosed relates to electrical devices in the nature of clips for holding fuses, switch blades and the like, and here considered under the general name of fuse clips.

These devices usually are made of copper or copper alloys, selected for conductivity, rather than for spring gripping qualities.

Objects of the present invention are to impart desirable spring gripping and holding qualities to the clip structure, in a simple, practical manner and in a way which will not interfere with the regular and intended use of the clip.

Other objects are to accomplish the addition of the spring reinforcing means by a simple assembling act, not requiring any secondary machine operations and which by that act will locate and permanently retain the reinforcement in place.

Other desirable objects and the novel features by which all purposes of the invention are attained are hereinafter set forth or will appear in the course of the following specification.

The drawing accompanying and forming part of the specification illustrates a present commercial embodiment of the invention, but structure may be modified and changed all within the true intent and broad scope of the invention as hereinafter defined and claimed.

Fig. 1 in the drawing is a side elevation of a pair of fuse clips having the invention incorporated therein.

Fig. 2 is a plan view of the same.

Figs. 3 and 4 are end views of one of the clips, showing it both with and without the fuse in place, portions appearing in section as on substantially the plane of line 3—4 of Fig. 1.

Figs. 5, 6 and 7 are detached end, plan and side views respectively of one of the spring wire reinforcements.

In Figs. 1 and 2, there is shown a pair of fuse clips 10, secured in longitudinally aligned properly spaced relation on a base 11, to hold a fuse 12.

These clips are shown as having narrow strips 13, along the outer edges of the same, severed intermediate their ends from the jaw portions of the clips along the lines 14, and displaced inwardly of the jaws to form stops for the opposite ends of the fuse, as illustrated in Fig. 2. This construction leaves shoulders at the lines 14, in back of or at the inner edges of the stop strips and which are utilized as a part of the means for retaining the spring reinforcements in place on the clips.

Additional supporting and retaining means for the spring reinforcements are provided at the inner edges of the clips, in the form of notches 15.

2

The spring reinforcements consist in each instance, of a length of spring wire doubled intermediate its ends into a ring-like loop 16, engageable in the notches 15, and reaching up over the sides of the opposed jaws. These ring-like elements carry at the ends of the same, angularly projecting portions 17, engageable longitudinally in the indented outer portions 18 of the jaws. The side gripping portions 17, have angularly extending end portions 19, curved inwardly, reversely to the curvature of the ring portion and engageable over the inwardly displaced stop strips 13, and over the shoulders provided by the cut edges 14.

The side arms 17, instead of being formed parallel may be convergently inclined toward each other as indicated in Fig. 6, to carry the spring tension as nearly uniformly as possible to the ends furthest from the ring and in a similar way, the end extensions 19, may be convergently inclined toward the ring as in Fig. 7, to effect a gripping engagement of these extensions over the positioning shoulders 14.

The spring reinforcements may be snapped into position over the fuse clips before or after the latter are mounted on the supporting base structure. The notches 15, locate the ring portions at the inner ends of the clips and the inwardly curved end extensions 19, by their engagement over the stop strips 13 and shoulders 14, hold the reinforcements securely in place on the clips, with pressure applied substantially uniformly at both ends of the clips. The contact ends of the fuses are therefore firmly held even though the material of the clips be quite thin and lacking in permanent spring character.

The clips may be made of light, thin, soft strip copper or copper alloys and the spring holding character be provided almost entirely by the applied double-ended spring wire loops. Since clips having the inwardly displaced stop strip at their outer edges are at present available, these may be used without other modification than putting the ring locating and holding notches in the inner edges of the same.

What is claimed is:

In combination, a fuse clip comprising opposed spring jaws having notches in one edge inwardly of the fuse gripping portions of said jaws and stop strips along the opposite edge displaced inwardly of the jaws and forming external shoulders along the lines of such inward displacement, and an open spring ring seated in said notches and circumferentially extending from said

notches over the outside of said jaws, said ring having longitudinal side extensions projecting angularly from the open end portions of the ring and extending from the inner edge of the jaws over the outside of said jaws substantially to said external shoulders at the opposite edge and end extensions projecting angularly from said side extensions inwardly over said stop strips and over

said external shoulders, said side extensions of the spring ring being tensioned inwardly over the outer sides of the jaws and said end extensions being tensioned toward the body of the spring ring and thereby supporting said spring ring in position on said jaws substantially against displacement from any direction.

GEORGE E. FITZGERALD.