STAND-OFF GUIDE FOR ANTENNA CABLES

Fig. 11

Fig. 12

Fig. 13

Fig. 14

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Filed June 10, 1958, Ser. No. 741,036

3 Claims. (Cl. 248—231)

This invention relates to sheet metal fasteners but particularly to clips for mounting a stand-off screw of the type employed for attaching the cable in spaced relation to the antenna mast.

An object is to produce a new and improved clip for mounting a stand-off screw on a mast, which can be removed from the clip and if desired, applied to wooden structures, thereby enabling the same screw to be used in either case.

Another object is to produce a new and improved clip for a stand-off screw which can be efficiently produced from a single piece of sheet metal at low cost and formed readily and conveniently with the desired screw-engaging threaded means.

A further object is to produce a sheet metal clip of the above character having the new and improved features of construction, arrangement and operation herein described and, for purposes of illustration but not of limitation, embodiments of the invention are shown in the accompanying drawings in which

Figure 1 is a perspective view of a stand-off guide for antenna cables applied to a mast;

Figure 2 is a sectional view showing in the plan the stand-off clip applied to the mast;

Figure 3 is an enlarged fragmentary side elevation of the stand-off clip;

Figure 4 is similar to Figure 3 but showing the opposite side of the clip;

Figure 5 is a transverse sectional view on an enlarged scale taken on the line 5—5 of Figure 4;

Figure 6 is an enlarged sectional view substantially on the line 6—6 of Figure 3;

Figure 7 is a fragmentary side elevation showing another form of attaching the metal band to the clip;

Figure 8 is an enlarged sectional view on a line 8—8 of Figure 7;

Figure 9 is a view similar to Figure 7 but showing an alternate form of connecting the metal strap to the clip;

Figure 10 is an enlarged sectional view on the line 10—10 of Figure 9;

Figure 11 is a perspective view of another form of clip, the screw and band being omitted;

Figure 12 is a plan view of the blank from which the clip of Figure 11 is formed;

Figure 13 is a perspective view of a still further form of clip; and

Figure 14 is a plan view of the blank from which the clip of Figure 13 is formed.

The illustrated embodiment of the invention comprises an antenna mast M to which is applied a sheet metal clip 10 which, as will hereinafter be described, the stand-off S screw-threadedly engages. The clip 10 has a flat end panel 11 formed with a nut impression 12 which may be in the form of the well known Prestolee. Integral with opposite sides of the end panel 11 are converging side walls 13 which terminate in parallel abutting wall portions 14 and 14a. Formed in the wall portion 14 adjacent the respective inclined side wall 13 is a laterally elongate slot 15. Directly opposed to the slot 15 and formed in the wall portion 14a is a pair of vertically spaced parallel slits 16 which provide therebetween an integral relatively narrow strip 17. The strip 17 is bowed to extend through and slightly beyond the slot 15, particularly as shown in Figure 5. A similar slot 18 is formed in the wall portion 14a directly adjacent to but slightly below the slot 14. In the wall portion 14 there is a single slit 19 disposed slightly below the lowermost of the slits 16. This provides a similar strip 20 which as shown is bowed to extend through and slightly beyond the slot 18. Thus the bowed strips 17 and 20 provide a guide through which the stand-off S extends and firmly embraces the same as will more fully be hereinafter described.

Integral with the lower ends of the wall portions 14 and 14a are convergent terminal arm portions 21 and 22 respectively. These convergent arm members partially embrace or straddle the mast M as shown in Figures 1 and 2. A flexible metal strap 23 has one end secured to the outside of the arm member 21. As shown, in Figures 3 and 6, there is a slot 24 in the strap 23 and integral and struck from the arm member 21 is a pair of ears 25 which extend through the slot 24 and are bent over as indicated on Figure 6.

In the arms 21 and 22 are slots 26 through which the strap 23 is threaded, particularly as indicated in Figure 2. The portion of the strap between these slots is engaged by the stand-off S. It will be observed that the stand-off has a tapered shank formed with wood screw threads and the end is pointed to engage the strap portion and force it against the outside of the mast end. As usual in these cases the stand-off has a loop head H in which an insulating disc D is secured, the disc being slotted to enable the ribbon-like antenna cable to pass.

An alternate form of anchoring the end of the strap is shown in Figures 7 and 8 in which the arm member 21a is secured to the strap 23a by a rivet 27.

Figures 9 and 10 show a still further form of anchoring the strap to the arm member and in this form an integral rivet portion 28 is formed on the arm member 21a. After the strap 23b is slipped over the rivet 26, the latter is upset as shown in Figure 10, thereby securely to hold the parts together.

From the above description it will be manifest that stand-off S is first brought into threaded engagement with the nut impression 12 in the end wall 11 of the clip. It then passes in intimate engagement with the bowed strip members 17 and 20 which are spaced vertically from each other a slight distance, thereby providing a supporting guide for the screw. The screw may engage these bowed strip portions so intimately as to cut their own threads therein. In any event a binding action is achieved so as to securely and unmistakably hold the screw in its adjusted position.

An alternate form of the invention is shown on Figures 11 and 12 in which the sheet metal body is in the form of a generally rectangular piece of metal 30. Extending from one edge a little more than half way through and a line parallel to the side edge portion is a slit 31. This provides on either side of the slit terminal arm portions 32 and 33 bent to the form shown in Figure 11. On the other portion of the sheet metal 30 is a screw-receiving portion indicated at 34. At one edge of the screw-receiving portion 34 in spaced relation is a pair of integral laterally extending tabs 35 which, as will hereinafter be indicated, are adapted to be received in notches 36 arranged at the opposite edge portion of the screw-receiving portion 34. Formed in the screw-receiving portion 34 are half threads 37 and 38 arranged in longitudinally extending outwardly dished troughs running from end to end of the portion 34 so that when the
sheet metal body 30 is bent or folded upon itself along the line determined by the slit 31, the half thread portions 37 and 38 will cooperate with each other to form a screw-receiving channel in which the stand-off screw above described can screw-threadedly engage. Manifestly the threads may be formed in any suitable manner. It may be rolled or pressed in the metal or as a matter of fact the threads may be tapped after the assembly is in its final form.

It will be understood that after the sheet metal body is bent upon itself as above indicated so that the half portions of the thread-receiving portion 34 are in flat engagement with each other, then the tabs 35 are folded to lie and extend into the notches 36 so that the side edge thereof is substantially flush and uninterrupted. After the fold has been completed, then the terminal portions 32 and 33 may be bent in opposite directions to the position substantially as shown in Figure 11 and in such position as to straddle or partially embrace the mast.

Each of the arms 32 and 33 has a transverse slot T for receiving a clamping strap as above described and these arms are also formed with holes H for anchoring one end of the clamping strap, thereby enabling the clamping strap 23 to be anchored or secured in one hole or the other as desired.

The form shown in Figures 13 and 14 is similar to that shown in Figures 11 and 12 except in this form the sheet metal body piece 39 is longitudinally elongate and of generally rectangular form. A central transverse slot 40 is formed in this piece and on opposite sides of the slot and in alignment with each other are longitudinally aligned outwardly dished screw thread portions 41 and 42 similar to the portions 37 and 38 above described. It will be observed that at the outer end portion of the screw receiving portion 40 are laterally extending tabs 43 and at the outer end of the other screw thread-receiving portion are notches 44.

It will be apparent that when the sheet metal piece is folded upon itself along a line defined by the transverse slot 40, the thread portions 41 and 42 cooperate with each other to provide a threaded channel for receiving the stand-off screw as will be readily understood. At the outer end portions of the piece are the terminal arm portions 45 and 46 which, as indicated in Figure 13, are bent outwardly at an inclined angle to straddle the mast to which the clip is attached. The tabs 43 are bent about the body portion as indicated in Figure 13 so as to lie in the respective notches 44 and thereby hold the upper portion of the body in the desired position. The slot 40 will be opened by any suitable tool into the desired rounded condition for receiving the stand-off screw. In the terminal arm portions 45 and 46 are transverse slots T' for receiving the clamping band and also holes H' in which the ends of the clamping band may be selectively anchored as will be readily understood.

It will be manifest from the above description that an exceedingly simple body portion is formed which can be inexpensively fabricated on a production basis, thereby substantially reducing the cost both of manufacture and assembly of the device. Thus from a production standpoint and from the aspect of efficiency both in manufacture and assembly, the forms shown in Figures 11 and 12, as well as Figures 13 and 14 are very desirable.

Numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention, especially as defined in the appended claims. What I claim is:

1. A stand-off guide for antenna cables comprising an elongate sheet metal body having a pair of plates in parallel face to face contact, an integral bight portion joining said plates, outwardly dished elongate channels in said plates cooperating to form a screw-receiving way, half threads on each channel for threadedly engaging a screw, integral tabs on one plate extending over the outside of the other plate for retaining the plates against spreading apart, and terminal arm portions integral with said plates respectively and inclining convergently for embracing one side of a mast, said arm portions having strap-guiding slots.

2. A clip for mounting a stand-off screw on a mast comprising a single piece of sheet metal folded upon itself providing an upper screw-receiving body part in which parts of the metal are in face to face contact throughout the length of such upper part, outwardly dished threaded portions extending from end to end of the upper part, means holding the sections of the upper part in face to face contact, said holding means comprising tab means on one of the upper body part sections overlapping the other part section, said other part section having notches means to receive the tab means, and convergent arm portions constituting the lower body part adapted to embrace one side of a mast.

3. A clip for mounting a stand-off screw on a mast comprising a single piece of sheet metal folded upon itself providing an upper screw-receiving body part in which parts of the metal are in face to face contact throughout the length of such upper part, said piece of sheet metal at one end being partially slitted to provide arm portions, said arm portions convergently extending to embrace one side of a mast, outwardly dished threaded portions extending from end to end of the upper part, and means holding the sections of the upper part in face to face contact.

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