April 9, 1963 W. K. PRIESTLEY ETAL 3,084,892

CABLE HANGER AND SPACER

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Fig 1.

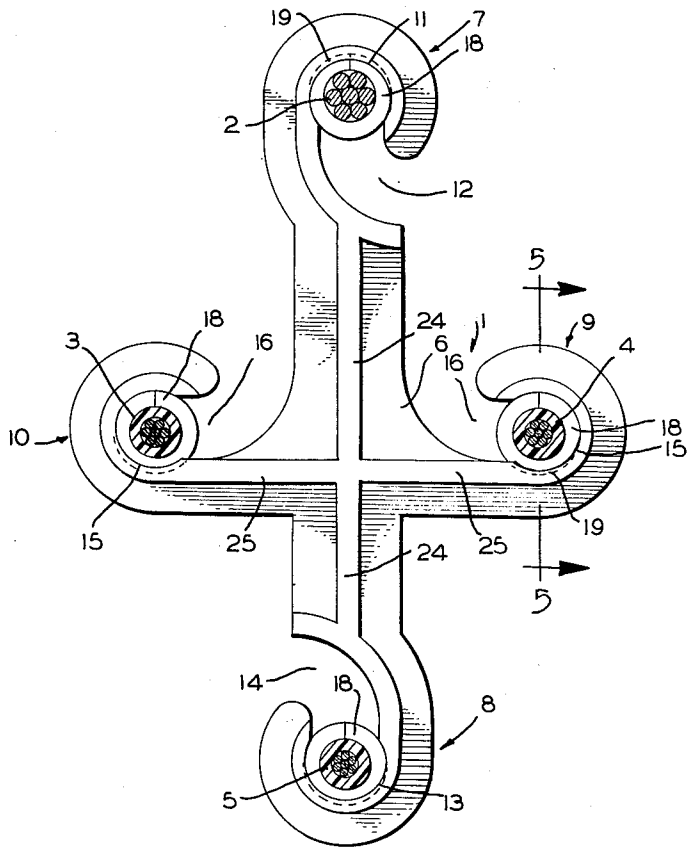


Fig 2.

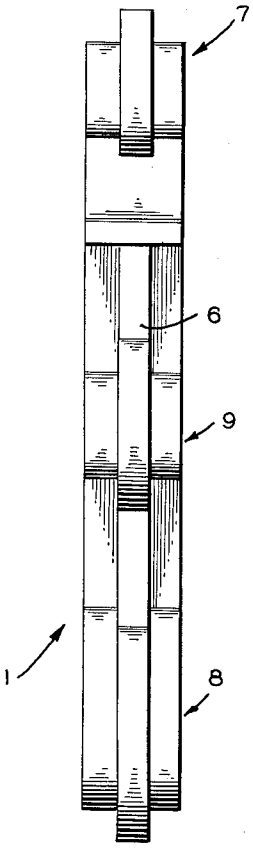
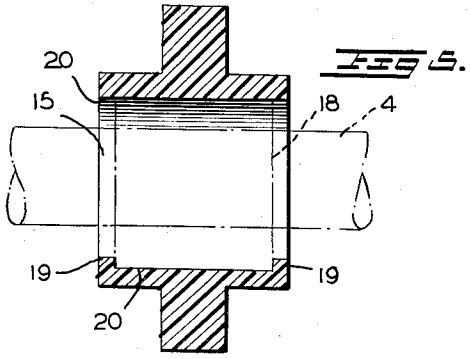


Fig 3.



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FIG 3.

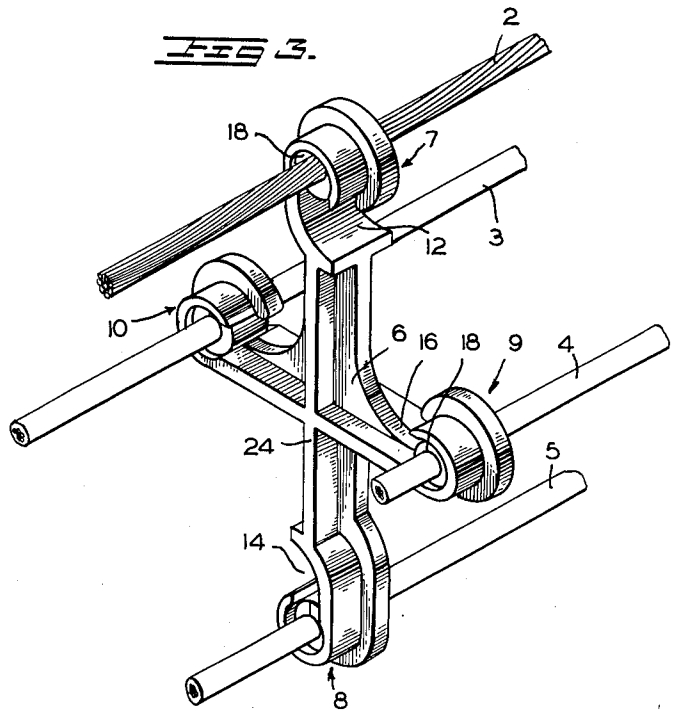


FIG 4.

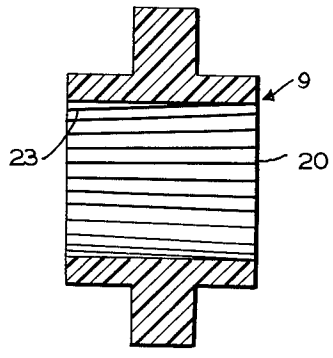
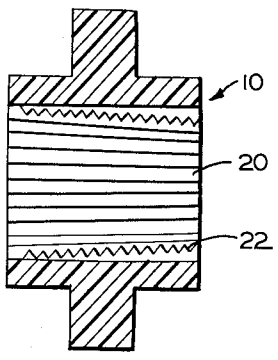


FIG 4A.



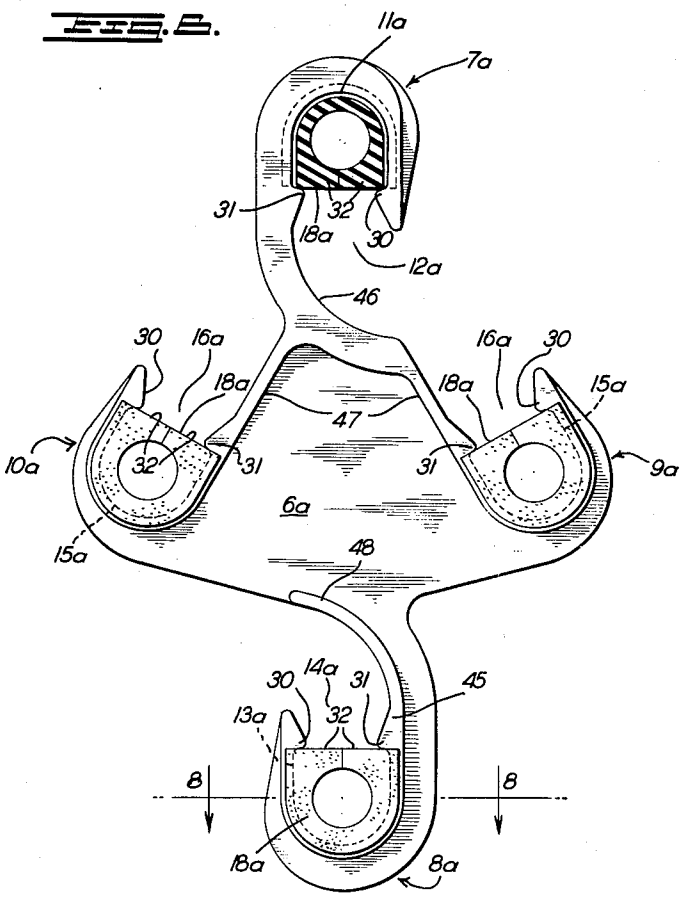
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CABLE HANGER AND SPACER

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Fig. 6.



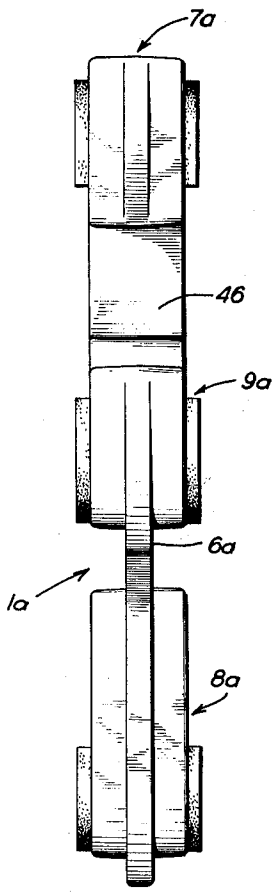


Fig. 7.

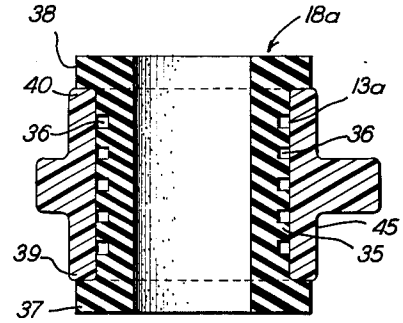


Fig. 8.

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CABLE HANGER AND SPACER

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Filed Nov. 12, 1959, Ser. No. 852,910
8 Claims. (Cl. 248—61)

This invention relates to electrical distribution systems. More particularly, it is concerned with providing an improved conductor hanger spacer device for use in an aerial cable system for the transmission of electric power wherein a plurality of lightly insulated electrical conductors are held in spaced relationship while at the same time being supported by a high strength metallic messenger. This application is a continuation-in-part of our previous application Serial No. 774,261, filed November 17, 1958, and now abandoned.

Accordingly, it is a primary purpose of this invention to provide an improved cable hanger spacer of the mid-span type and of a rigid one-piece design wherein the hanger spacer advantageously acts to hold the electrical conductors in a fixed spaced suspension with respect to a metallic messenger and to each other.

Other objects and purposes of the instant invention will become more apparent from a review of the following detailed description when taken in conjunction with the appended drawings wherein—

FIGURE 1 is an end elevational view of the unitary one-piece hanger spacer of the instant invention and discloses the manner in which it is secured to a messenger wire and a plurality of spaced conductors;

FIGURE 2 is a side elevational view of the hanger spacer shown in FIGURE 1;

FIGURE 3 is a perspective view of a cable system of the instant invention showing the hanger spacer as used therein;

FIGURE 4 is a partial cross-sectional view of one of the hook-shaped elements of the hanger spacer when the inner surface of the hook shaped element is provided with tapering teeth;

FIGURE 4*a* is a view similar to FIGURE 4 and discloses the use of serrated as well as tapered teeth on a hook shaped element in the hanger clamp of FIGURES 1–3;

FIGURE 5 is a sectional view taken along line 5—5 of FIGURE 1 and with the conductor and anchoring bushing being shown in dotted lines;

FIGURE 6 is an end elevational view of a modified hanger spacer, together with accessories therefor and with parts thereof being shown in section;

FIGURE 7 is a side elevational view of the hanger spacer shown in FIGURE 6; and

FIGURE 8 is a cross-sectional view of the hanger spacer shown in FIGURE 6 when taken along line 8—8 thereof.

The cable clamp or hanger spacer **1** of the instant invention which may be advantageously made in the form of a unitary rigid plate is generally disposed between the conventional utility poles employed for supporting metallic messenger wire **2** and a plurality of lightly insulated conductors **3**, **4** and **5**.

The unitary or single piece hanger spacer **1** of the invention is advantageously molded from a suitable plastic material such as methyl methacrylate in such a way that it is provided with a web portion **6** and a plurality of hook shaped elements **7**, **8**, **9** and **10**. Hook shaped element **7** is adapted to engage the messenger wire **2** and hook shaped elements **8**, **9** and **10** are adapted to engage the conventional lightly insulated conductors **3**, **4** and **5**. Hook shaped element **7** projecting upwardly and outwardly from the top of the web **6** is provided with a generally downwardly opening messenger receiving recess **11** and a mouth **12**. Hook shaped element **8**, which projects downwardly and outwardly from the bottom of the web **6**, is provided with a generally upwardly opening conductor receiving recess **13** and mouth **14**. It will be observed by reference particularly to FIGURE 1 that the mouth **14** opens to the left in a generally opposite lateral fashion to the right-hand opening mouth **12** of recess **11** for hook shaped element **7** or on the opposite side of the web **6** from mouth **12**.

The hook shaped elements **9** and **10** in turn are disposed intermediate the top and bottom hook shaped elements **7** and **8** and project on opposite lateral sides of the web **6**. These hook shaped elements **9** and **10** are provided, as in the case of hook shaped element **8**, with conductor receiving recesses **15** and the mouths **16**. However, contrary to the manner in which the mouths and recesses of the hook shaped elements **7** and **8** project, it will be observed by reference particularly to FIGURE 1 that the mouths and recesses of both hook shaped elements **9** and **10** project generally inwardly toward the web **6** and toward each other instead of in an opposite direction to each other.

In a further advantageous embodiment of the invention, the mouths **12**, **14** and **16** of the various recesses for the hook shaped elements **7**, **8**, **9** and **10** are also restricted in size. That is to say, they are of a smaller cross-sectional width than that of the recesses with which they are associated. This is to provide only enough clearance to permit the covered conductors and messenger to be slid into place in the various recesses **11**, **13** and **15**. The recesses or sockets **11**, **13** and **15** are also considerably larger than the conductors **3**, **4** and **5** and messenger wire **2** for the purpose of snugly accommodating the split bushings **18** conventionally used for anchoring the messenger and cables securely within the recesses or sockets **11**, **13** and **15**. Bushings **18** may be made of a suitable and somewhat resilient plastic material such as neoprene. During installation of the hanger clamp, the messenger and the conductors are placed in their respective sockets in the hanger. Split bushings **18** are then placed over the messenger and the conductors and then slid into the recesses or sockets, thereby locking the hanger clamp to the messenger and the conductors. The lip members **19** along the bottom edge of each side of the respective conductor sockets and along the top edge of each side of the messenger socket assist in engaging and retaining the bushings **18** within the sockets or recesses **11**, **13** and **15**. Lip members **19** serve to anchor bushings **18** along with the messenger wire and the conductors to the hanger spacer. The combination of messenger and bushing or conductor and bushing nearly fills each socket locking the conductors and messenger in place and preventing the conductors and messenger from backing out of the sockets through the restricted mouths or openings **12**, **14** and **16** when the hanger spacer **1**, messenger wire **2** and conductors **3**, **4** and **5** are subjected to wind forces or vibration.

In a further advantageous embodiment of the invention and as particularly indicated in FIGURE 4*a*, it is contemplated that the interior bushing engaging surface **20** of any of the recesses of the respective hook shaped elements **7**, **8**, **9** and **10** may be provided with serrations **22** which will serve to firmly frictionally engage the split neoprene bushings **18** thereby assisting in preventing displacement of the messenger wire **2** and the conductors **3**, **4** and **5** with respect to the cable clamp.

If desired and as particularly indicated in FIGURES 4 and 4*a*, the surfaces **20** may be provided with longitudinally disposed tapering teeth **23** and these teeth may also be serrated as at **22** in FIGURE 4*a*. When teeth **23** which taper in a longitudinal or parallel direction to the general axis of the messenger and conductors are used, it is further contemplated that the cable clamp **1** would

be so molded that any pair of oppositely disposed hook shaped elements, such as hook shaped elements 9 and 10, would have teeth which taper in opposite directions. Thus, for example, in the case of hook shaped element 9, the teeth 23 would taper downwardly and to the right as viewed in FIGURE 4 while the teeth of hook shaped element 10 would taper downwardly and to the left as indicated in FIGURE 4a. The same type of practice could be employed in the case of the hook shaped elements 7 and 8. In other words, by providing tapered teeth at opposing portions of the clamp and allowing these to taper in different directions, any tendency of the clamp to twist in one direction will be effectively resisted by the clamping or tightening action of the clamp in the other direction about the bushings 18 and the conductors or messenger engaged thereby. Teeth 23 serve to anchor the bushings 18a along with the conductors and messenger wire to the hanger spacer. Moreover, in the case where the surfaces 20 of the hook shaped elements 7, 8, 9 and 10 are provided with tapered and/or serrated teeth as noted above, the lip members 19 may or may not be used depending on the results desired.

Finally, it is also contemplated that the cable clamp or hanger spacer 1 when made of the single plate of plastic material will be suitably reinforced or thickened at the hook shaped elements as well as by the means of the angularly disposed rib portions 24 and 25.

In a further advantageous embodiment of the invention and as indicated in FIGURES 6–8 inclusive, the unitary one-piece hanger spacer 1a may be of a somewhat modified construction wherein it is comprised of a web portion 6a and hook shaped elements 7a, 8a, 9a and 10a. Hook shaped elements 7a, 8a, 9a and 10a are provided respectively with recesses 11a, 13a and 15a, and mouths 12a, 14a and 16a for receiving the messenger wire 2, conductors 3, 4 and 5 and split bushings 18a in the same general fashion as shown in FIGURE 1.

The principal differences between the hanger spacer of FIGURE 1 and that shown in FIGURES 6–8 reside in the use of the oppositely disposed detents or fingers 30 and 31 on the various hook shaped elements 7a, 8a, 9a and 10a, and the structure of the bushings 18a. These detents 30 and 31 project partially across and restrict the size of opening of the mouths 12a, 14a, and 16a. These detents are also adapted to engage the preferably flattened surfaces 32 of the split bushings 18a and serve to anchor the bushings 18a along with the messenger and conductors within openings 11a, 13a and 15a.

As indicated, particularly in FIGURE 8, the body portions of bushings 18a are provided with alternate ribs and recesses 35 and 36. The ends of the body portions of the bushings 18a are also provided with flanges 37 and 38 which are adapted to overlap and engage the side edges 39 and 40 of the hook shaped elements 7a, 8a, 9a and 10a adjacent the recesses therein. By the use of the flanged bushings 18a and the detents or fingers 30 and 31 on the mouths of the several hook shaped elements 7a, 8a, 9a and 10a any tendency of the bushings and their associated messenger and/or conductor cable to slide and become dislodged from the hook shaped elements in either a lateral or longitudinal direction is effectively prevented.

The alternate ribs and recesses 35 and 36 on the bushings 18a enhance the resiliency and compressibility of the bushings 18a thereby facilitating their being locked within the openings or recesses of the hook shaped elements during installation. The hanger clamp 1a may also be suitably reinforced or thickened such as by means of integrally formed rib portions 45, 46, 47 and 48.

An advantageous embodiment of the invention has been herein disclosed and described. It is obvious that various changes and modifications may be made therein without departing from the spirit and scope thereof as defined in the appended claims wherein what is claimed is:

1. As an article of manufacture a unitary cable hanger spacer, said hanger spacer comprising a single plate having a central web and a plurality of hook shaped elements projecting outwardly from said web, one of said hook shaped elements projecting upwardly from the web and having a generally downwardly opening recess and mouth for receiving a messenger wire, another of said hook shaped elements projecting downwardly from the web and having a generally upwardly opening recess and mouth for receiving a conductor, said second-mentioned mouth also opening in an opposite lateral fashion with respect to said first-mentioned mouth and other hook shaped elements disposed intermediate said first and second-mentioned hook shaped elements and projecting outwardly from opposite sides of said web, said other hook shaped elements all being provided with conductor receiving recesses and mouths which open in opposite directions to each other and generally project and open inwardly towards the said web and towards each other, the width of the mouth of each of said hook shaped elements being less than that of the recess with which it is associated and each hook shaped element being further provided with means preventing dislodgment of the messenger wire or conductor associated therewith.

2. An article of manufacture as set forth in claim 1 wherein said means comprise at least one detent projecting partially across the mouth of each of said hook shaped elements.

3. A hanger spacer assembly of the type described comprising the combination of a unitary single plate hanger spacer provided with a central web and a plurality of hook shaped elements projecting outwardly from the said web, one of said hook shaped elements projecting upwardly and having a generally downwardly opening recess and mouth for receiving a messenger wire, another of said hook shaped elements projecting downwardly from the web and having a generally upwardly opening recess and mouth for receiving a conductor, the mouths of each of said hook shaped elements also generally projecting in opposite lateral directions and other hook shaped elements disposed intermediate said first and second-mentioned hook shaped elements and projecting outwardly from opposite sides of said web, said other hook shaped elements all being provided with conductor receiving recesses and mouths which open in opposite directions to each other and generally project inwardly towards the web and towards each other, a pair of opposed detents projecting partially across the mouth of each of said hook shaped elements and resilient bushing elements encompassing the messenger wire and the conductors and disposable along with the messenger wire and the conductors within the recesses of the said hook shaped elements, said bushing elements being in locking engagement with the said detents.

4. A hanger spacer assembly of the type set forth in claim 3, wherein said bushing elements are provided with end flanges which overlap the spacer adjacent the recesses in the hook shaped elements.

5. A hanger spacer assembly of the type set forth in claim 3, wherein at least a part of the body portion of the bushing elements is provided with ribs and recesses.

6. A hanger spacer assembly of the type set forth in claim 5 wherein the ends of said bushing elements are provided with flanges which overlap the spacer adjacent the recesses in the hook shaped elements.

7. As an article of manufacture a unitary cable hanger spacer, said hanger spacer comprising a single plate having a central web and a plurality of hook shaped elements projecting outwardly from said web, one of said hook shaped elements projecting upwardly from the web and having a generally downwardly opening recess and mouth for receiving a messenger wire, another of said hook shaped elements projecting downwardly from the web and having a generally upwardly opening recess and mouth for receiving a conductor, said second-mentioned mouth also opening in an opposite lateral fashion with respect to said first-mentioned mouth and other hook

shaped elements disposed intermediate said first and second-mentioned hook shaped elements and projecting outwardly from opposite sides of said web, said other hook shaped elements all being provided with recesses and mouths which open in opposite directions to each other and generally project and open inwardly towards the said web and towards each other, and the surfaces of said recesses being serrated.

8. As an article of manufacture a unitary cable hanger spacer, said hanger spacer comprising a single plate having a central web and a plurality of hook shaped elements projecting outwardly from said web, one of said hook shaped elements projecting upwardly from the web and having a generally downwardly opening recess and mouth for receiving a messenger wire, another of said hook shaped elements projecting downwardly from the web and having a generally upwardly opening recess and mouth for receiving a conductor, said second-mentioned mouth also opening in an opposite lateral fashion with respect to said first-mentioned mouth and other hook shaped elements disposed intermediate said first and second-

mentioned hook shaped elements and projecting outwardly from opposite sides of said web, said other hook shaped elements all being provided with recesses and mouths which open in opposite directions to each other and generally project and open inwardly towards the said web and towards each other, and the recesses on any pair of oppositely projecting hook shaped elements being provided with oppositely extending tapered teeth.

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