United States Patent

[11] 3,586,292

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[54] **SPREADER AND SPACER FOR CABLE COMPONENTS**
4 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **254/131**
[51] **Int. Cl.** **B66f 3/00**
[50] **Field of Search** ..... 254/131; 29/203 H; 174/146, 147

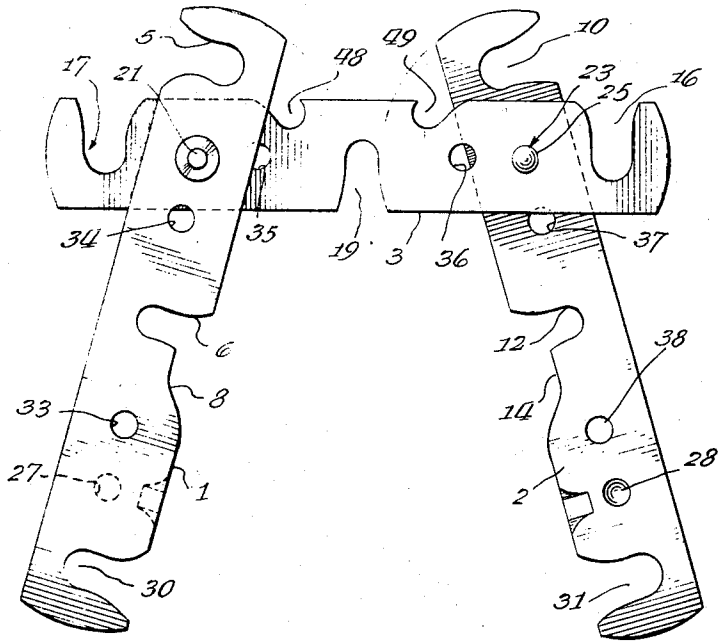
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ABSTRACT: This invention is a device for spreading and spacing one or more components of a multicomponent cable in spaced-apart relation to each other.

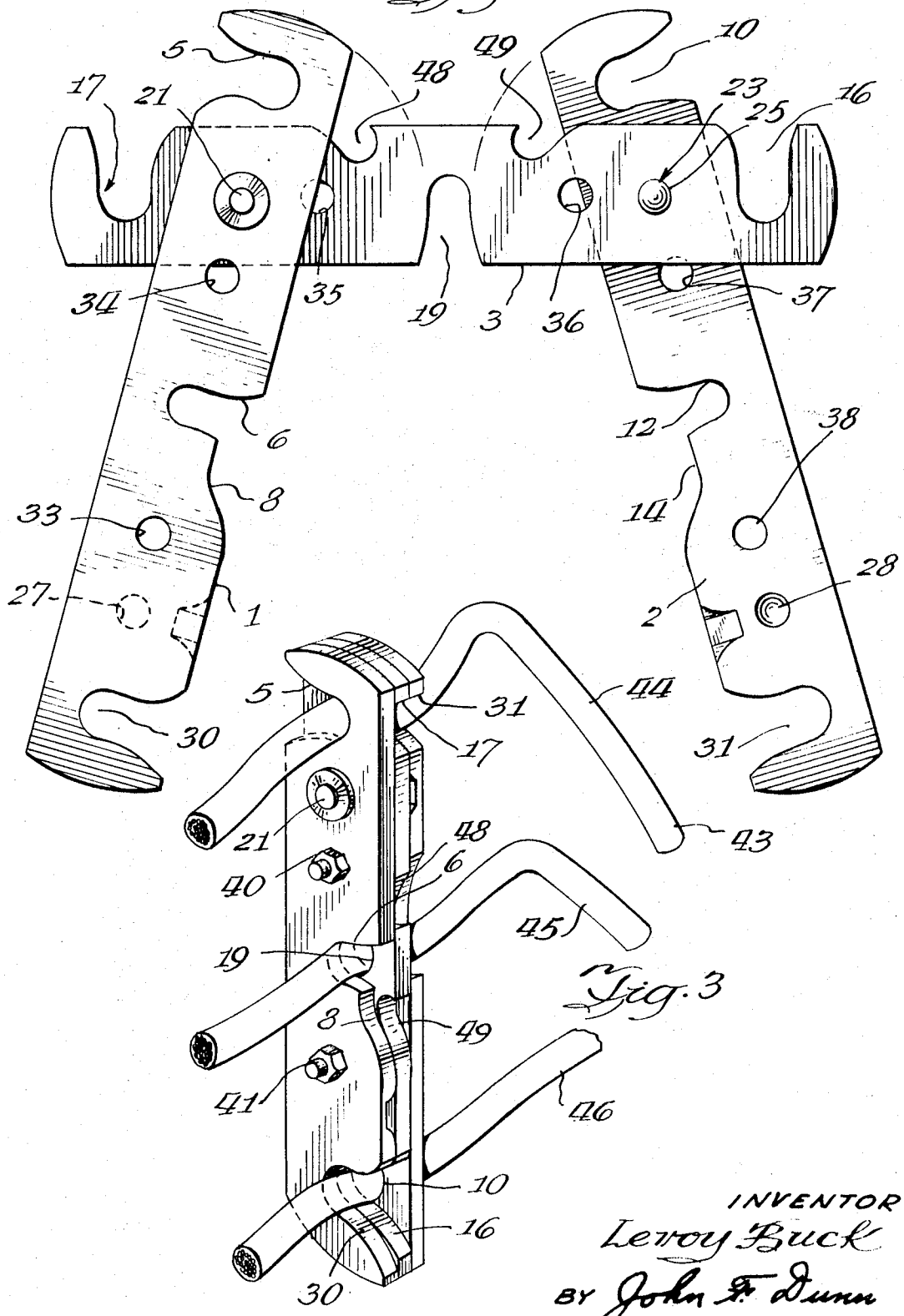


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SHEET 1 OF 2

Fig. 1



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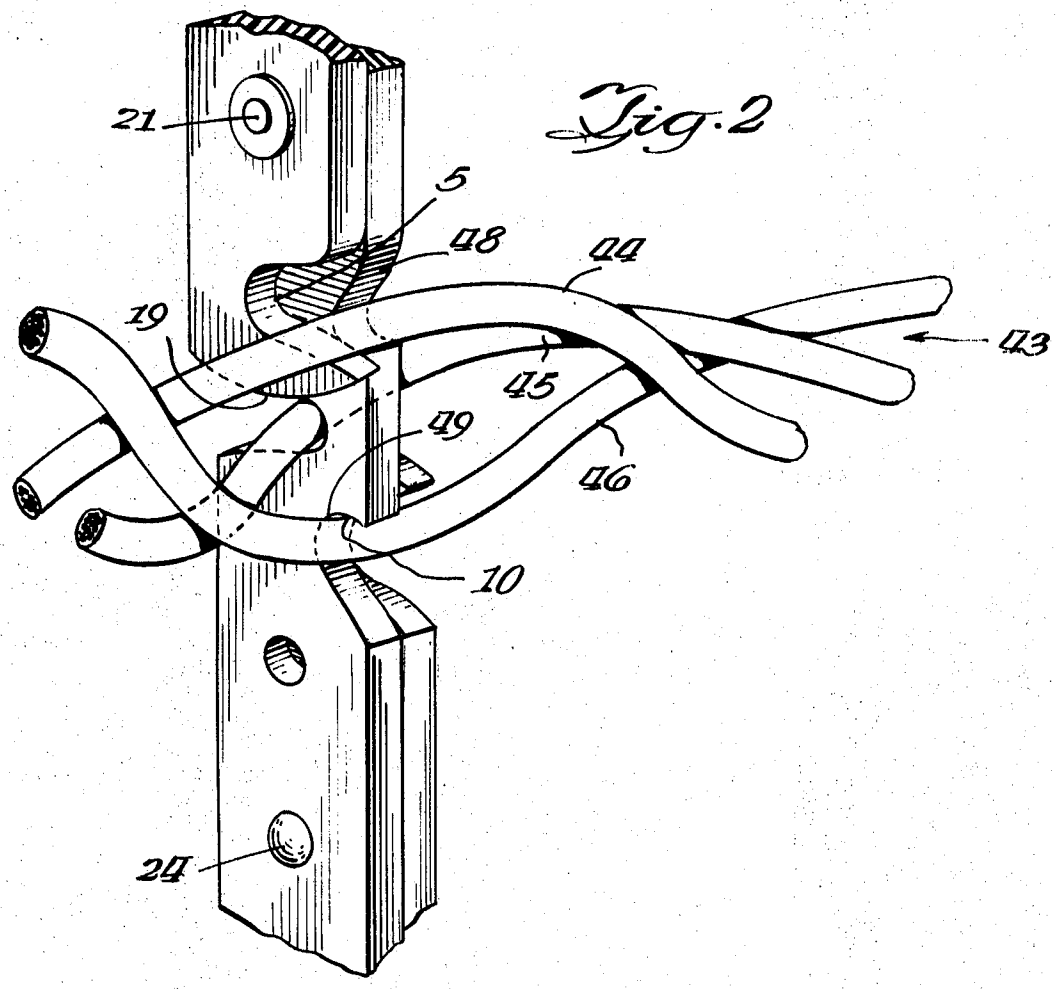


Fig. 2

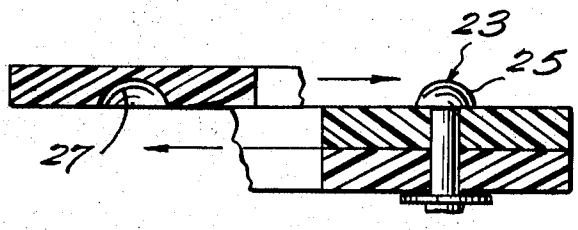
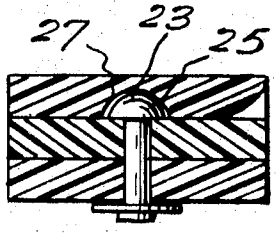


Fig. 5

Fig. 4



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SPREADER AND SPACER FOR CABLE COMPONENTS

This invention relates to a tool for spreading and separating cable components. More particularly this invention relates to a device of simple and inexpensive design which is advantageous to spread and space cable components by hand.

In the distribution of electric power by means of electrical power transmission lines cable is commonly employed consisting of mutually insulated twisted conductors.

Incident to making consumer service connections and other connections required for safe, adequate distribution of electrical power it is necessary to splice into the primary conducting cable and to do this it is necessary to separate the conductors from each other in order to provide sufficient working space to make splices. To do this, first the outer covering, if any, must be removed and then the conductors must be untwisted for a distance sufficient to provide the necessary working space.

Because of the tension required to make a suspended cable hang properly from pole to pole it is difficult for one man to get the necessary leverage to spread cable components, particularly where the worker is positioned at the top of a support pole, or where he is suspended between poles. Because of the difficulty involved it is not uncommon to employ a second worker whose job, from the ground, is to pull against the cable by means of a line secured to one of the cable components in order to provide a stable force against which the worker attempting the splice can pull to make the necessary separation of components. This technique is awkward to apply and the extra labor costs resulting from the use of a second worker are disadvantageous. Even after components are separated they must be maintained in a separated position to avoid any chance, after insulation is removed, of contact between bare components and the likely result of serious or fatal injury to workmen.

There are a number of prior art devices available to maintain cable components in spaced relation with respect to each other; however, these are disadvantageous because they are of no assistance initially in the difficult and awkward job of spreading twisted cable components. Application of prior art devices is unsatisfactory because they are likely to disengage before the desired number of components are separated.

An object of this invention is a device for the spreading and spacing of cable components. Another object of this invention is a device for spreading and spacing twisted electrical cable components. A further object of this invention is a device to enable a single worker to conveniently spread and space electrical cable components. Still a further object of this invention is a device which enables a single worker to conveniently spread and space electrical cable components by hand. Other objects of the invention will be apparent from the detailed description thereof which follows.

FIG. 1 shows, in partially open position, an embodiment of the invention for spreading and spacing two components of a twisted cable from the remainder thereof.

FIG. 2 is a perspective view showing an embodiment of the invention in open position engaging the components of a three-conductor cable.

FIG. 3 is a perspective view showing an embodiment of the invention in closed position engaging the components of a three-conductor cable.

FIG. 4 is a cross-sectional view illustrating the nub of one bar interlocking with the depression of another bar.

FIG. 5 is a cross-sectional view showing the nub of one bar and the depression of another bar in open position.

Broadly the present invention is a device for spreading and separating twisted cable components, said device having at least two bars, with each bar having at least two opposed like-spaced recesses. The bars are pivotally connected to each other with the recesses of each bar disposed adjacent and opposite to the recesses of the other bar when the bars are in parallel relation with respect to each other. Thereby when the bars are inserted between the components of a cable rotation of the bars with respect to each other to register the recesses spreads and separates one component of the cable from the remaining components and safely, securely and advantageously maintains said components in spaced relation as long as required.

In a preferred embodiment of the invention three bars are employed to mutually separate two components of a twisted cable from the remaining components thereof. Each of two bars has at least two opposed like-spaced recesses therein, and a third bar has three recesses therein, two of which open through the same edge of said bar and the third recess opens through the opposite edge of the bar intermediate the other two recesses. On the third bar each of the recesses is spaced with respect to the other the same distance as the recesses of the first and second bars. The first and second bars are pivotally connected to the third bar on opposite sides thereof and intermediate different recesses on the third bar with the recesses on the first and second bars disposed adjacent and opposed to the intermediate recess of the third bar when all three bars are in parallel relation. Therefore, when the bars are inserted between components of a cable rotation of the first and second bars with respect to the third bar to register the recesses spreads, separates, and maintains two of the cable components in spaced relation to each other and the remainder thereof.

Thus it will be seen that the present invention is advantageous. It can be inserted between components of an unseparated cable, the components and appropriate recesses can be engaged without the extra force and awkward motion required to spread components using prior art devices and, leverage is available to spread components all at the same time with the minimum of effort. The device of the present invention is further advantageous because of its simple and inexpensive design and construction, and it is economical to mass produce the devices and to leave them permanently in place. Thus applicant has invented a device which is both an efficient tool for spreading cable components and is an advantageous in-line spacer.

Referring now to the drawings for purposes of illustration, the embodiment of FIG. 1 shows elongated flat bars **1**, **2** and **3**. These bars may be identical in overall dimensions, and are constructed of suitable insulation material such as reinforced polyester glass fiber of adequate strength and durability to spread and space electrical cable components and, when locked in registered position, to maintain said components in spread spaced relation on a permanent basis under all weather conditions.

Bar **1** is provided with opposed recesses **5** and **6** extending transversely of the bar and opening through opposite longitudinal edges of the bar. Recess **6** includes curved portion **8** to facilitate reception of a cable component by bar **3**.

Bar **2** contains recesses **10** and **12** respectively similar in shape to recesses **5** and **6** of bar **1**. Recess **12** includes curved portion **14** to facilitate reception of a cable component by bar **3**. Recesses **5** and **6** and **10** and **12** are spaced apart a like distance. Bar **3** includes similar recesses **16** and **17** extending transversely of bar **3** and opening through the same longitudinal edge thereof. Bar **3** also includes recess **19** extending transversely of the bar and opening through the opposite longitudinal edge thereof. Recesses **17** and **19** are spaced apart the same distance as recesses **5** and **6** of bar **1**, and recesses **16** and **19** are spaced apart the same distance as recesses **10** and **12** of bar **2**.

Bar **1** is pivotally connected to bar **3** by means of rivet **21** as shown. Other fastening devices well known in the art may be employed to securely pivotally connect said bars. The pivot formed by rivet **21** is positioned in bars **1** and **2** so that recesses **5** and **19** will be adjacent and opposed when said bars are in parallel relation and so that rotation of bar **1** with respect to bar **3** through of a circle will register recesses **5** and **17**. Bar **2** is pivotally connected to the opposite side of bar **3** by means of rivet **23**, the head of which is formed in the shape of a nub **25**. A similar nub is provided on the head of rivet **21**.

Other fastening devices known in the art may be employed to pivotally connect bars 2 and 3 as recited above with respect to the connection of bars 1 and 3. Bars 2 and 3 are pivotally connected so that recesses 10 and 19 are adjacent and opposed when said bars are in parallel relation and so that rotation of bar 2 with respect to bar 3 through half a circle will register recesses 10 and 16. Therefore when bars 1 and 2 are rotated to register as aforesaid recesses 6, 12 and 19 also register.

The sides of bars 1 and 2 adjacent bar 3 are provided with depressions 27 and 28 which depressions are disposed to interlock with nubs 24 and 25 as shown in FIGS. 4 and 5.

In the embodiment illustrated in the drawings all three bars are shown of equal size and shape. Therefore, in order for recesses 5, 17 and 6 and 19, and 10 and 16 to register it is necessary to provide additional recesses 30 and 31 respectively in bars 1 and 2. Bars 1 and 2 may suitably be shortened with respect to bar 3 so that recesses 30 and 31 are not required.

It is readily apparent that other embodiments employing bars of different sizes and shapes and different sizes with respect to each other may be advantageous in certain applications. In the event the recesses in the outer bars are not like spaced, it is only necessary to space the corresponding recesses in the common bar a like distance to the companion recesses respectively on each outer bar. When this is done, the respective recesses will position adjacent the intermediate recess on the common bar in parallel relation and will close and register when the outer bars are rotated.

When the bars are in registered position as shown in FIG. 3 nubs 24 and 25 together with depressions 27 and 28 interlock to secure the bars in such position. In application it may be advantageous to permanently fasten said bars in registered position. Therefore holes 33, 34, 35, 36, 37 and 38 are provided so the bars can be permanently fastened in registered position by means of fasteners be and 41.

Thus it will readily be apparent that three-wire twisted electrical power transmission cable of the type illustrated at 43 containing components 44, 45 and 46 may be separated by inserting the flat spreader device in unregistered position between two of the twisted cable components as shown in FIG. 2. By twisting the device into a position substantially perpendicular to the longitudinal axis of the cable, one component, 45, may then advantageously, without spreading, be inserted into recess 19. The other two components may be conveniently inserted into small recesses 48 and 49. Rotation of bars 1 and 2 with respect to bar 3 to register will engage component 44 in recess 5 and component 46 in recess 10, and rotation of each bar through half a circle will result in the registering of the recesses as aforesaid, with component 44 spread and spaced in the opening formed by recesses 5 and 17, component 46 spread and spaced in the opening formed by recesses 10 and 16, and component 45 positioned in the opening formed by recesses 6 and 19, all as shown in FIG. 3. Interlocking of nubs and depressions conveniently stabilizes the components in spaced and spread position and leaves both hands of a worker free to permanently fasten the bars in registered position to secure the components in permanent spread spaced relation.

Thus it will be apparent that the invention is not limited to the structure and the exact methods described above but shall also include other structures and combinations falling within the broad scope and spirit of the invention, the detailed description, and the claims which follow.

What I claim is:

1. A device for spreading and separating twisted cable components comprising a pair of bars, each bar having at least two opposed like-spaced recesses wherein one of said bars has a smaller third recess adjacent and opposed to one of the other recesses on said bar and disposed to align with the adjacent recess of the other bar when said bars are in parallel unregistered relation, said bars being pivotally connected, with the recesses of each bar disposed adjacent and opposite to the recesses of the other bar when said bars are in parallel relation whereby when said bars are inserted between the components of a cable rotation of said bars with respect to each other to register said recesses spreads and separates one component of said cable from the remainder thereof.

2. A device for spreading and separating twisted cable components comprising first and second bars, each of said bars having at least two opposed recesses, a third bar having two recesses opening through the same edge of said bar and a third recess opening through the opposite edge of and intermediate said two recesses of the third bar, said intermediate recess and one of said opposed recesses in said third bar being spaced the same as the distance between recesses in the first bar and said intermediate recess and the other opposed recess of said third bar being spaced the same as the distance between recesses in said second bar, said first and second bars each being pivotally connected to the third bar on opposite sides thereof and intermediate different recesses on said third bar with recesses of said first and second bar disposed adjacent and opposed to the intermediate recess of said third bar when said bars are in parallel relation whereby when said bars are inserted between components of a cable, rotation of said first and second bars with respect to said third bar to register said recesses spreads and separates two of said components from the remainder thereof.

3. The device of claim 2 including means to fasten said bars in a registered position.

4. The device of claim 2 in which said third bar has a nub on each side thereof, and each of said first and second bars has a depression therein which nubs and depressions are disposed to interlock when said recesses register.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,586,292 Dated June 22, 1971

Inventor(s) Leroy Buck

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [72] "Leroy Buck, 243 S. Walter Street, Ramsey, Ill. 62080" should read -- Leroy Buck, Ramsey, Ill. 62080 --.

Signed and sealed this 23rd day of May 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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