Aug. 6, 1940. J. BLACKBURN 2,210,058

WIRE SPLICER

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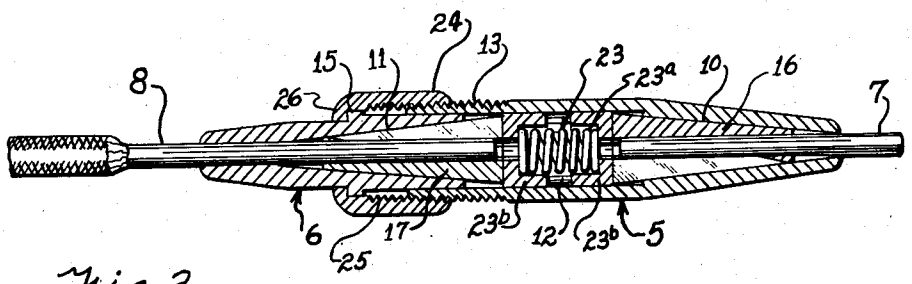


Fig. 2.

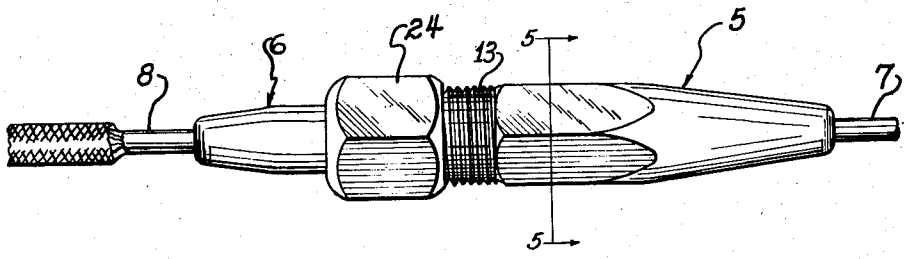


Fig. 1.

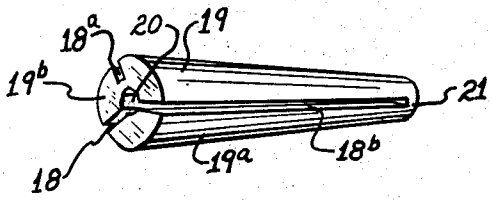


Fig. 3.

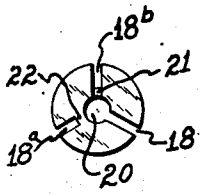


Fig. 4.

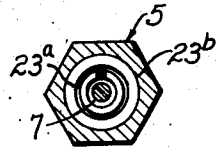


Fig. 5

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WIRE SPLICER

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3 Claims. (Cl. 24—124)

This invention relates to wire splicers or couplers for use in splicing together telephone or telegraph lines, or for joining electric service lines of any kind.

One of the principal objects of the invention is to provide a very simple and positive form of splicer coupling or connector for the purpose in hand, and wherein is embodied not only means for resiliently urging or pressing the conical wire gripping wedges to their seats, but additionally thereto a means for positively and solidly forcing the said wedges to place, and whereby the wires will be positively connected in axial relation, independently of the said resilient agency for operating the conical wedges.

Another object of the invention is to provide in combination, a pair of complemental tubular wire holders having oppositely turned conical sockets formed therein, tubular and conical wire gripping lugs or wedges adapted to seat in the sockets with their butts or blunt ends turned inwardly or centrally in opposed spaced relation, a resilient press core or element for positioning in axial alignment between the said blunt ends of the gripping lugs for resiliently urging these lugs into the conical sockets of the wire holders so that the inserted wires may be effectively gripped thereby, and a positive means for forcing the wire gripping lugs solidly into the said sockets and locking them there independently of the aforementioned agency for resiliently urging the gripping lugs home.

Still another object is to provide a pair of tubular or longitudinally bored wire holders, one of the holders having a medially positioned conical socket, and being exteriorly screw threaded at its intended inner end, and the other wire holder being turned and adapted at its intended inner end to pass nicely into the enlarged bore of the inner end of its companion holder, and having thereat also a conical socket extended into its bore reversely to the socket of the companion holder, and having also at this end an annular shoulder adapted to rotatably engage and retain against outward longitudinal movement, the annular, inwardly flanged end of a threaded connecting nut or union, an elongated and tapped nut or union, whereof the tapped portion opens out through one end and is adapted threadedly to engage the threaded end of the exteriorly threaded holder, the opposite end of this nut being flanged or turned inwardly to reduce the bore thereof, the said inturned annular flange being adapted to rotatably engage the said shoulder of the companion holder, a pair of conical and axially bored wire gripping lugs seated in reversed relation within the conical sockets of the wire holders, and a resilient core seated within the bore of the first named wire holder and braced between the said wire gripping wedges or lugs to force them home, the complemental threaded extents of the union nut and the exteriorly threaded holder being greater than the degree or coefficient of compressibility of the said resilient core, whereby when that coefficient is overcome in the process of turning up the union nut, a positive and firm action is exerted upon the wire gripping wedges or lugs to force them solidly to their seats.

With the foregoing objects in view, a preferred embodiment of the invention is illustrated in the accompanying drawing, constituting a part of the specification, and wherein:

Figure 1 is an elevation of a splicer made in accordance with this invention, and showing the ends of two wires inserted therein.

Figure 2 is a longitudinal section through the assembly of Figure 1.

Figure 3 is an enlarged detail of one of the conical wedges.

Figure 4 is a view of the larger end of the conical wedge of Figure 3.

Figure 5 is a section on the line 5—5 of Figure 1.

In practising this invention I provide a pair of elongated wire holders represented generally at 5 and 6. These holders are both tubular for passing the wires 7 and 8 which are to be connected, and are formed interiorly with conical sockets 10—11 for disposal in reversed relation when the holders are assembled end to end, so that their flared wider ends are turned centrally towards one another. The socket 10 of the holder 5 is formed towards the outer end of the element as shown, so as to leave a cylindrical sleeve portion 12 opening out axially through its opposite inner end with a diameter equal to that of the larger inner end of the socket 10 and merging thereinto. This sleeve portion 12 is threaded exteriorly as shown at 13 clear out over the inner extremity thereof.

The inner end of the complemental holder 6 is nicely turned and journaled to snugly and telescopically fit into the sleeve 12 of the holder 5, and the conical socket 11 is formed in this inserted end in opposed or obverse relation to the socket 10. An annular shoulder 15 is formed exteriorly on the holder 6 in spaced relation from the inner extremity thereof, this spacing being substantially equal to the extent of the threaded end 13 of the holder 5.

A pair of tubular and conical wire gripping

lugs or wedges 16—17 are freely mounted, one in each of the sockets 10—11 of the holders 5—6, these wedges being elongated and sectional in structure, being longitudinally cut or slitted as shown at 18—18a—18b into three parts or sections 19—19a—19b surrounding the open center 20 of each wedge. The slit 18 of each wedge is clean-cut clear through to the open center of the wedge and from end to end thereof as shown in Figure 4, but the slits 18a—18b are not extended clear out at the ends, but small connecting portions 21—22 are left alternately at the ends of the wedges, whereby the three sections of each wedge are held together in a unitary, and yet slightly compressible and expansible form. By virtue of this structure the wedge sections move evenly inward, in parallel relation, into gripping contact with the inserted wires that are to be spliced, as will be later referred to and described.

A resilient press core 23 made up of an expansive coil spring 23a provided with centrally apertured end caps 23b is inserted within the sleeve 12, endwise between the wedges 16—17, the caps 23b being of a diameter freely and nicely to pass within the sleeve.

A cupped onion nut 24 is provided, the same being bored and interiorly threaded through one end as shown at 25 for engaging the threads 13 of the holder 5, and having an annular inturned flange 26 at the opposite end adapted to rotatably engage the annular shoulder 15 of the holder 6. Thus by sliding the union nut 24 upon the holder 6 with the flange 26 turned outward and then aligning the two holders 5—6 axially, inserting the end of the holder 6 into the sleeve 12 of the holder 5, and then threading the union nut 24 upon the threaded end 13 of holder 5, the holders may be effectively joined. In this operation the inturned obtuse or butt ends of the wedges 16—17 will press inwardly upon the intermediate core 23, and if the nut is turned up far enough, the core 23 will be crushed together until its resiliency is entirely overcome and a firm and solid pressure is exerted by the turning of the nut, upon the wedges 16—17 for forcing them into their sockets and into gripping relation upon the ends of inserted wires.

It is to be especially noted that the extent of the interior threading 25 of the union nut 24 is substantially equal to the exterior threading 13 of the holder 5, and both are of sufficient extent to afford the union nut 24 a considerable degree of travel upon the threaded end of the holder 5, this travel being in fact of sufficient length, space or extent to overcome the coefficient of compressibility of the resilient core 23 in the operation of the device as above referred to.

In the use and operation of the splicer, the holders 5 and 6 are threadedly connected, and the two wires 7—8 which require joining are inserted at their ends, one into each of the tubular holders, the wires being moved inwardly through the open centers 20 of the wedges. The nut union 24 is then twined up over the threaded sleeve 12 of the holder 5. This action results in forcing the holder 6 into the holder 5, and compressing the resilient core 23 which in turn forces the wedges 16—17 outward into their sockets 10—11, causing the sections of these wedges to compress evenly upon the wires 7—8, thereby locking them in place within the wedges and against removal, under the resilient action of the core 23.

However, should the spring of this core break, or should it for any reason become inoperative, there would be danger of the spliced wires pulling out of the holders and destroying the joint.

This possibility however is effectually obviated by turning up the nut 24 and compressing the core 23 until its coefficient of compressibility is entirely overcome, or in other words until the core is compressed to the limit. When this occurs, the screw pressure of the nut 24 bears solidly upon the butts of the wedges, with all intervening resiliency eliminated. In this condition, it would be impossible for the wires to come free, even though the resilient core 23 might break or become inoperative.

In case it is desired to break to joint and disconnect the wires, this is readily done by unturning the union nut 24.

Owing to the sectional structure of the wedges 16—17 and the alternated connections of the sections, the sections move evenly for their entire length into gripping relation upon the wires, thus increasing the frictional contact and the efficiency of the splicer.

While I have here shown and described a preferred embodiment of the invention, and certain specific structural features thereof, the same may be changed or modified as found desirable, within the scope of the claims.

I claim:

1. A wire splicer comprising two elongated, tubular holders turned and bored for forming a telescopic union at one end, the bore of each holder having a conical socket formed therein in reversed relation tapering outwards towards the free ends of the connected holders, tapered wedge elements in the said sockets with openings provided longitudinally therethrough aligned with the bores of the holders, the butts of the wedge elements being turned inwardly in spaced relation, a resilient core between the butts of the wedge elements for urging them into their sockets, and a threaded union embracing the telescopically connected ends of the holders for drawing them together and compressing the resilient core to its limit of compressibility, thereby forcing the wedge elements solidly into their sockets for contracting same upon the ends of wires inserted thereinto through the free ends of the tubular holders.

2. A wire splicer comprising a pair of elongated, tubular holders, an end of one holder being bored out to form an enlarged sleeve for engaging a journaled end of the other holder, the sleeve being threaded exteriorly, there being an annular shoulder formed on the journaled end of the other holder in spaced relation to the extremity thereof, an interiorly threaded union nut for engaging the threaded sleeve of the one holder through one end of the nut, the opposite end of the nut having an inturned annular flange for engaging the annular shoulder of the other holder, there being conical sockets formed interiorly of the two holders and tapered reversely outwardly, tubular and compressible wedges mounted in the sockets, and a resilient core seated in the enlarged sleeve of the one holder and braced between the wedges of the two holders, whereby when the union nut rotatably supported upon one holder is turned up over the threaded sleeve of the other holder, the two holders are drawn together and the wedges forced outwardly in their sockets into gripping relation upon the ends of wires passed into said wedges, the said extent of travel of the nut enabling it to force the holders inward together to crush the resilient core

and force the wedges solidly into their sockets and into gripping relation upon inserted wires.

3. In a wire splicer including two elongated tubular holders turned and bored for, and thereby forming, a telescopic union at one end, and the bore of each holder at its opposite free end having a conical socket formed therein tapering outwards, and including tapered wedge elements in the said sockets with wire receiving openings therethrough, the butts of these elements being turned inwardly in spaced relation; a resilient core seated between the butts of the wedge elements for urging same into their sockets, and means for drawing the connected holders telescopically together and thereby compressing the resilient core to its limit of compressibility and forcing the wedge elements solidly into their sockets for contracting same upon the ends of inserted wires.

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