A wire tool for joining, assembling, and more specifically twisting wire together in a relatively rapid, consistent, and precise manner is described herein. The wire tool for twisting a plurality of corresponding wires together preferably includes a wire-manipulating body having an outside gripping surface and an inside wire-engaging portion. The wire-engaging portion preferably includes a plurality of parallel passages each having a first opening located at a first end and a similarly constructed second opening located at a second end of the passage. The passages are positioned in close proximity to each other with each passage sized to receive a corresponding wire of the plurality of corresponding wires therethrough. After placement of each of the plurality of wires through the passages from openings on the same end of the passages, the wire manipulating body is rotated and the wires are simultaneously drawn from the passages to engage the wires in electrical contact and/or otherwise form a uniformly twisted wire bundle.
one grip with interchangeable disks

FIG. 9
WIRE-TWISTING TOOL AND RELATED METHOD

FIELD OF THE INVENTION

[0001] The invention generally relates to a tool used by electricians and other persons who handle wire configurations, and more particularly to a hand tool for joining, assembling, and more specifically twisting or splicing wire together in a relatively rapid, consistent, uniform, and precise manner.

BACKGROUND OF THE INVENTION

[0002] A variety of means are utilized by electricians and other operators in the electrical field to connect one or more wires of one wire bundle to one or more wires in a second wire bundle to form a splice. One such means that is almost always available to a technician is manual manipulation using several fingers. In this practice, the several wires are stripped of any insulation, positioned closely together, and then a twisting action is applied to entwine or connect selected wires into a spliced wire bundle. Although this method provides a visual verification of whether electrical continuity between individual wires was accomplished, for obvious reasons, this manual method has potentially harmful consequences for the operator.

[0003] While technicians generally seek to accomplish such wiring twists while lines are inactive and electricity is not being supplied, a dead or electrical null condition is not always assured and may inadvertently result in a harmful shock to the operator. Furthermore, the exposed wires that must be placed in contact with one another during the twist, to ensure electrical continuity, may be sharp and potentially injurious to the unprotected fingers of the electrician. Still further, by manually twisting the wire there is no assurance of twist uniformity among connected wires; a condition that may be desirable if an internally threaded wire nut is to be used to secure the wire splice in place. Finally, the limitations of using bare or gloved fingers may result in an ineffective twisting, which is subsequently susceptible to disengagement of the several twisted wire strands. Many of those same shortcomings or problems exist even if pliers are used to grip and twist together the wires.

[0004] In an alternative method, electricians and other persons wanting to join multiple wire strands from different wire bundles into a unified spliced bundle having electrical continuity typically begins by first stripping the ends of each wire to be spliced (removal of each wire’s insulation). Stripped ends of each wire to be spliced held close together, the wire tips are inserted into a wire nut having internal threads that engage and grip the bare metal tips. By turning the wire nut in one direction the individual wires are gradually twisted together into a splice of electrically connected wires.

[0005] Although the wire nut provides a relatively safe method for joining wires when compared to simply manually twisting the wires, the wire nut apparatus and method does not permit the wire tips to be viewed inside the nut to determine whether electrical continuity between individual wires exists. Accordingly, the individual wires may be joined physically, as indicated by being twisted together along their lengths, however, all of the bare metal tips may not be electrically connected. The non-electrical continuity between one or more of the wire tips when using a wire nut typically occurs when one or more of the individual wire tips moves relative to the other wire tips, such as when attempting to hold the untwisted wire bundle with one hand while maneuvering the wire nut atop the wire bundle with the other hand. In this regard, determination of successful wire joining of individual wires into a twisted bundle having electrical continuity between all the wires is typically not realized until circuit testing is completed.

[0006] Accordingly, there exists a need for a wire-twisting tool and method that permits individual wire tips to be twisted in a relatively rapid, consistent, and precise manner into a tight, uniform wire bundle that facilitates, if desired, the forming of an electrical contact between two or more wires, without the previously noted disadvantages.

SUMMARY OF THE INVENTION

[0007] For the purposes of summarizing the invention, certain objects and advantages have been described herein. It is to be understood that not necessarily all such objects or advantages may be achieved in accordance with any particular embodiment of the invention. Thus, for example, those skilled in the art will recognize that the invention may be embodied or carried out in a manner that achieves or optimizes one advantage or group of advantages as taught herein without necessarily achieving other objects or advantages as may be taught or suggested herein.

[0008] The invention described herein generally relates to a hand-tool used by electricians and other persons who typically handle wire configurations for commercial or residential applications. More particularly, the invention described herein relates to a hand-tool for assembling, twisting, or otherwise joining or splicing wires together in a relatively rapid, consistent, uniform, and precise manner.

[0009] The hand-held wire tool preferably includes a wire manipulating body having an outside gripping surface and an inside wire-engaging portion. The wire-engaging portion preferably includes a plurality of cylindrical shaped parallel passages, each having a first opening located at a first end and a similarly constructed (size and shape) second opening located at the second end of the passage. The passages are positioned in “close proximity” to each other with each passage sized to receive a corresponding wire or conductor tip to be spliced of a plurality of corresponding wires or conductors therethrough. After placement of each of the plurality of wire tips through the passages from openings positioned on the same end of the passages, the plurality of wire tips are preferably twisted together upon rotation of the wire manipulating body while simultaneously drawing each of the plurality of wire tips from the passages.

[0010] The invention described herein further includes a method for twisting, joining, or otherwise splicing a plurality of corresponding wires together. The method preferably includes the steps of (1) providing the hand-held wire twisting tool as described herein, (2) inserting each of a plurality of wire tips to be spliced from a first wire bundle and a second wire bundle through passages formed in a wire-engaging portion of a wire-manipulating body from passage openings on the same end of the wire tool, (3) grasping the wire-manipulating body with one hand and the wires to be spliced with the other hand, and (4) rotating or twisting the wire-manipulating body, while simultaneously drawing the plurality of wires from the passages.

[0011] Typically, prior to inserting each wire into the passage opening, the end or tip of each wire to be spliced is
stripped by removing the outside insulation to expose the metal conductor. Electrical tape, a wire nut, or similar type device may be placed over the spliced wires to secure them in place.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows one example of a wire bundle having an insulating jacket and three wire strands positioned therein and stripped prior to each wire tip being received into a corresponding passage of the present invention.

[0013] FIG. 2A shows a wire tool for receiving a plurality of wire strand tips through openings in passages positioned in a wire-engaging portion of the tool, and for producing a twisted/spliced wire bundle upon rotation of the tool.

[0014] FIGS. 2B-2C are side cutaway views of the wire tool showing parallel passages each having a cylindrical shape and further including circular openings that are tapered and positioned at opposite ends of the passage (shown in FIG. 2B), and parallel passages each having a conical shape and further including circular non-tapered openings positioned at opposite ends of the passage (shown in FIG. 2C).

[0015] FIG. 3 shows a prior art wire tool.

[0016] FIG. 4 shows the individual wires of a first wire bundle and a second wire bundle to be spliced being received into passages positioned in the wire tool.

[0017] FIG. 5 is similar to FIG. 4 and shows the individual wires of a first wire bundle and a second wire bundle to be spliced received into passages in the wire tool.

[0018] FIG. 6 shows one method of producing a twisted wire bundle in a relatively rapid, consistent, uniform, and precise manner by rotating the wire tool (shown by arrow “A”) in one direction while simultaneously drawing each of the plurality of wire tips from the wire tool passages (shown by arrow “B”).

[0019] FIG. 7 shows a spliced wire pair formed by the method shown in FIG. 6.

[0020] FIG. 8 shows the placement of a wire nut connecting a pair of wires from a first wire bundle and a second wire bundle.

[0021] FIG. 9 shows an alternative embodiment of the wire tool described herein having a handle attached.

DETAILED DESCRIPTION

[0022] Embodiments of the present invention will now be described with references to the accompanying Figures, wherein like reference numerals refer to like elements throughout. The terminology used in the description presented herein is not intended to be interpreted in any limited or restrictive manner, simply because it is being utilized in conjunction with a detailed description of certain embodiments of the invention. Furthermore, various embodiments of the invention (whether or not specifically described herein) may include novel features, no single one of which is solely responsible for its desirable attributes or which is essential to practicing the invention herein described.

[0023] The detailed description herein focuses primarily on a wire twisting tool and related methods of use as they may apply to one or more embodiments of a device for joining, connecting, or otherwise slicing a plurality of wires or conductors into a uniform twisted bundle. Persons of ordinary skill in the art will understand that other applications of the invention are equally applicable. Such applications may include, but are not limited to, rope where similar use and techniques of the apparatus, as described herein, may be applicable.

[0024] One example of a wire bundle 30 used by electricians and other persons who handle wire configurations is shown in FIG. 1. The wire bundle 30 shown in FIG. 1 includes a plurality of individual insulated wires 31-33 for making electrical connections positioned within an outer insulating jacket 35. Persons of ordinary skill in the art will understand that the invention described herein is not limited to a three-strand wire bundle. Wire bundles having more or fewer individual wire strands may also be used in accordance with the present invention.

[0025] As indicated above, in one prior art method electricians and other persons wanting to join multiple wire-strands having electrical continuity into a unified bundle typically begin by first stripping the ends/tips of each wire to be spliced from a first wire bundle and a second wire bundle (removal of each wire's insulation). With the stripped ends of each wire held close together, the wire tips are inserted into a corresponding wire nut having internal threads that engage and grip the bare metal tips. By turning the wire nut in one direction the wires are gradually twisted together to electrically connect the wires.

[0026] FIG. 2A shows a wire tool in accordance with the present invention for receiving a plurality of wire tips through openings in passages positioned in a wire-engaging portion of the tool, and for producing a twisted/spliced wire bundle upon rotation of the tool. The wire-twisting tool 5 of the present invention preferably includes a wire-manipulating body 10 having an outside gripping surface 15 and an inside wire-engaging portion 20. The wire-twisting tool 5 is preferably appropriately sized to fit generally in the palm of a person’s hand. Accordingly, in one embodiment, the wire-twisting tool 5 may be considered a hand-held device.

[0027] Preferably, the wire-manipulating body 10 is a substantially flat or planar shaped disc. In this regard, the circular shape of the outside gripping surface 15 is a preferred shape as it generally permits the wire tool to be effectively and uniformly rotated or manually manipulated in the hand. Persons of ordinary skill in the art will understand the wire-manipulating body 10 of the wire tool may have a square, triangular, or some other design shape.

[0028] A knurled section 25 may be included on some portion or along the entire outside gripping surface 15. The outside gripping surface 15 may include other features such as a grooved outer circumference having a rubber ring insert positioned therein (not shown) or one or more finger grooves or loops (not shown) to assist in gripping, holding, or otherwise manipulating the wire-twisting tool 5.

[0029] As shown in FIG. 9, in one embodiment, the outside gripping surface 15 of the wire-manipulating body 10 may be removable received along its circumference into a correspondingly shaped grooved body 100. In other words, wire tools as described herein having different wire-engaging portion 20 configurations may be removable received into the correspondingly shaped grooved body 100. The grooved body 100 includes a generally arched shaped handle 105 attached at one end 110 to a first outer edge of the grooved body 100. The handle 105 preferably extends over the wire-engaging portion 20 and is attached at the other end 115 to the grooved body 100 along a second outer edge that is opposite the first outer edge.
Preferably, the outside gripping surface 15 is sized to be hand held and configured to transmit a rotational force along an axis parallel to the wires received into passages 26-29 positioned in the wire-engaging portion 20; the force being applied from the hand of a user (as indicated by reference “A” of FIG. 6) to the wire-manipulating body 10.

Depending on various factors including, among others, material and manufacturing costs, as well as, consumer expectation, the wire-tool 5 may be constructed of any suitable material or materials, including being made entirely of metal, plastic, wood, a composite, or any combination thereof. Depending on the materials, the risk of electrical shock to the user can be reduced (such as by providing the tool partly or totally from plastic or other insulating material.

The tool 5 may be manufactured by any suitable techniques, including forging, blow-molding, and metal stamping, to name a few. In one rudimentary embodiment of the wire-twisting tool 5, manufacture of the device may include the use of a whole saw to produce the wire-manipulating body 10 having an outside gripping surface 15 with a circular shape. Appropriately sized drill bits may then be used to drill passages in the wire-engaging portion 20 to receive the plurality of corresponding wire tips.

As further shown in FIGS. 2A-2C, the wire-engaging portion 20 preferably includes a plurality of parallel passages 26-29 each having a first opening 26A-29A located at a first end 26D-29D, and a similarly constructed second opening 26C-29C located at a second end 260-290 of the passage 26-29. Preferably, the first openings 26A-29A and second openings 26C-29C are circular in shape, corresponding to the general shape of the wire tips to be received into each passage 26-29. The passages 26-29 are preferably cylindrical in shape and positioned parallel and in “close proximity” to each other with each passage 26-29 being sized to receive a corresponding wire tip to be spliced of the plurality of corresponding wires therethrough (although persons of ordinary skill in the art will understand that the passages can be provided in a wide variety of suitable shapes and relative positions, depending on the particular application for which the invention is being used). Positioning of the parallel passages in close proximity permits the wire tips or ends to protrude from the wire tool 5 in a closer or more parallel relationship when compared to wires twisted with passages spaced further apart and/or sloped toward a central axis.

In this regard, the term “close proximity” refers to a measure of distance between passages that is generally considered to be equal to or less than the distance or space occupied or needed to accommodate a similar sized passage(s) utilized with the wire-twisting tool. In other words, “close proximity” placement of the passages would not permit the addition of another passage between existing passages without overlap into an existing passage or the compromise of the structural integrity between passages.

The “close proximity” positioning of passages 26-29 in the present invention is in contrast to wire tools such as those disclosed in U.S. Pat. No. 1,181,297, issued to Fenlason, U.S. Pat. No. 5,752,551, issued to Trueblood, and U.S. Pat. No. 353,535 issued to Bunch have passages or notches for accepting wires separated by a central handle, as in the case of the Fenlason and Trueblood patents, or by the body of the twist (reference “A” in FIG. 2 and FIG. 3), as in the case of the Bunch patent.

In this regard, those prior art devices typically cause wires to protrude from the passages at a greater distance from each other when compared to wires of the present invention that protrude from passages placed in “close proximity” to each other. For example, FIG. 3, corresponding to FIG. 1 of the Fenlason patent, shows a wire twisting tool with wires 70A and 70B protruding from passages 55A and 55B at a greater distance from each other than wires 77 of a first wire bundle 40 and a second wire bundle 50 that protrude from passages 26 and 27 of the present invention positioned in “close proximity” to each other, as shown in FIG. 5. As shown in FIG. 3, although such separation between the wire passages 55A, 55B allows twisting along portions of the wire’s length, it prohibits twisting of the wires at the wire tips 71A, 71B by the wire tool.

In this regard, if a wire nut 55-57, electrical tape, or other device is used to connect the wires 70A, 70B after they are removed from the Fenlason tool, the wire tips 71A, 71B must be brought together and twisted over a relatively greater distances than would be needed with wires 75-77 positioned in “close proximity”. Repositioning of individual wires in this manner will typically increase the likelihood of introducing bends in one or more of the wires to be joined. Generally, when bringing together wire ends, as distance between wire ends increases so does the likelihood of introducing unwanted bends, kinks, etc., that may compromise the structural or electrical integrity of the wire bundle.

When the distance between the passages 55A, 55B is increased and/or, as shown in FIG. 3, the passages 55A, 55B are sloped toward a central axis “CA” in an attempt to improve wire twisting near the bottom 60 of the wire-twisting tool, the problem of introducing unwanted bends in one or more wires 70A, 70B is generally exacerbated and placement of a wire nut or other connecting device is likewise made more difficult.

In contrast to Fenlason and those other references mentioned above, the “close proximity” positioning of the passages 26-29 in the wire-twisting tool 5 described herein permits twisting of a plurality of wires 75-77 at the wire tips 36-38 of each wire 75-77 by the wire-twisting tool 5 as each wire is removed from the wire engaging portion 20, as shown by reference 85 of FIG. 7. In other words, as described here, in one method of use the wire-twisting tool 5 preferably splices wires at the wire tips, i.e., no need to bring the wire tips together to complete the splice after the wire-twisting tool 5 is removed. As explained below and shown in FIG. 6, preferably, twisting of the wires along a portion of their length distal from the tip does not occur due to the wires being held during rotation “A” of the wire-twisting body 10 about an axis parallel to the wires during the splicing process.

In the embodiment of the present invention shown in FIG. 3B, the cylindrical shape and parallel configuration of the wire-twisting tool passages 26-29 permits placement of each of the plurality of wire tips 35-37 through passage openings 26A-29A, 26C-29C from either side 26D-29D of the passages 26-29, i.e., bi-directional insertion of each wire tip 35-37 is possible. In practice however, each of the plurality of wire tips 35-37 to be twisted are inserted into the same end or side of the passages (same side of the wire-tool), and the plurality of wire tips 35-37 are twisted together upon rotation of the wire-manipulating body 10. The openings 26A-29A, 26C-29C may be tapered 80 on
each end 263-293, 263-29D of the passages 26-29 to ease insertion or to assist in guiding each wire 75-77 into its corresponding passage.

[0041] In another embodiment of the present invention, shown in FIG. 3C, the passages 26-29 may be conical in shape. Although the many benefits of the wire-twisting tool 5 as described herein may still be realized, such a conical shaped-passage would generally reduce the versatility of the tool by making it relatively more difficult to receive the wire tips 35-37 into a passage 26-29 from either side of the wire-twisting tool 5 when compared to a wire-twisting tool 5 having substantially similarly constructed (size and shape) openings on each side of a passage 26-29.

[0042] Preferably, the passages 26-29 are positioned equal distance from each other and the rotational axis or general center of the wire-manipulating body 10. In other words, the passages 26-29 are preferably evenly distributed/spaced around the rotational axis of the wire-manipulating body 10 so that the applied rotational force is evenly distributed among the wires to produce a uniform twisting force on each wire.

[0043] Due the preferred equal distance positional relationship between passage(s) and the central axis, twisting or splicing a number of wires fewer than the number of passages provided on the wire-engaging portion 20 of the wire-manipulating body 10 is preferably accomplished by positioning those wires so as to best maintain the equal distant relationship between wires to be spliced and the rotational axis of the wire tool 5.

[0044] In this regard, the distance between adjacent passages 26-29 of the wire-engaging body 20 does not need to be the same as the distance of the passages 26-29 from the rotational axis of the wire-manipulating body 10, i.e., center of the wire-manipulating body 10. Generally, in this regard, the distance between passages 26-29 will decrease as the number of passages 26-29 increases. Conversely, the distance between passages 26-29 will increase as the number of passages 26-29 decreases.

[0045] Preferably, each passage 26-29 of the wire-engaging portion 20 of the wire-manipulating body 10 described herein is sized to receive there through a single corresponding wire tip 35-37 of the plurality of corresponding wire tips 35-37. In this regard, if the wire-twisting tool 5 is intended to twist a plurality of 18-gauge wires then each of the passages 26-29 would be sized slightly larger than 18-gauge or 0.040 inches. Similarly, if the wire-twisting tool 5 were designed to accept a plurality of 12-gauge wires then each passage 26-29 would be sized slightly larger than 0.081 inches.

[0046] Persons of ordinary skill in the art will understand that, depending on the size and number and "bendability" of the wires in a given application, the body 10 can be provided with passages in any suitable combination of sizes, shapes and/or configuration(s)/location(s). Likewise, they will understand that a given body 10 with a particular pattern and size of passages therein may be useful for a variety of wire sizes, numbers of wires, etc.

[0047] Alternatively, the wire-twisting tool 5, as described herein, may include passages 26-29 sized to receive different sized wires. Accordingly, for example, the wire-engaging portion 20 of the wire-manipulating body 10 may have one or more passages 26-29 for receiving 10-gauge wire and one or more passages 26-29 for receiving 18-gauge wire or 14-gauge wire. Ideally, the number of passages 26-29 is equal to or greater than the number of corresponding wire tips 35-37 to be twisted. If the number of wires 75-77 to be twisted is fewer than the number of passages 26-29, preferably, the wires 75-77 are evenly spaced in the available appropriately sized passages 26-29 to produce a uniform twisted or spliced wire-bundle, see FIG. 7.

[0048] In one embodiment, the length of each passage 26-29 is from about 0.0625 inches to about 0.125 inches. In another embodiment, the length of each passage 26-29 is about 0.125 inches. Persons of ordinary skill in the art will understand that the length of one or more of the passages may vary depending on, among other things, the wire-tool's intended application, and construction of the wires used with the wire-twisting tool.

[0049] The present invention further includes a method for twisting a plurality of corresponding wires together. The method preferably includes the steps of (1) providing the hand-held wire twisting tool as described herein and shown in one embodiment in FIG. 2A (2) inserting each of a plurality of stripped wire tips from a first wire bundle and a second wire bundle through passages formed in a wire-engaging portion of a wire-manipulating body from passage openings on the same end of the wire tool, as shown in FIG. 4 and FIG. 5, (3) grasping the wire-manipulating body with one hand and the wires to be spliced (those received into the passages) near the wire-manipulating body with other hand, and (4) rotating or twisting the wire-manipulating body along an axis parallel to the wires, while simultaneously drawing the plurality of wires from the passages, as shown in FIG. 6. In this regard, as the wire or conductor tips are joined or spliced together, the wire tool will slide or will be drawn (pulled) off the end of each wire leaving a uniformly twisted or spliced wire bundle, as shown in FIG. 7.

[0050] Typically, the method preferably includes the step of removing each of the plurality of wires from the passages of the wire-engaging portion of the wire tool, and securing the wires together with a wire nut or similar device.

[0051] In an alternative method of use, in contrast to the wire device of Fenlason and other such tools, the wire-twisting tool 5 of the present invention (having passages 26-29 positioned in “close proximity” to each other) permits, if desired, increased wire twisting along a greater portion of the wire bundle, while reducing the likelihood of bends or kinks being introduced into one or more wires when splicing wires together. In this regard, the user would not grasp the wires to be spliced (those received into the passages) near the wire-manipulating body as indicated in step 3 above. In other words, those wires may be grasped at any convenient location along the wire’s length. This would permit twisting along a portion of the each wire to be joined that would not otherwise be permitted by the grasping or holding of such wires.

[0052] Accordingly, the steps of an alternative method for use of the present invention include the steps of (1) providing the hand-held wire twisting tool as described herein and shown in one embodiment in FIG. 2A, (2) inserting each of a plurality of stripped or insulated wire tips from a first wire bundle and a second wire bundle through passages formed in a wire-engaging portion of a wire-manipulating body from passage openings on the same end of the wire tool, as shown in FIG. 4 and FIG. 5, (3) grasping the wire-manipulating body with one hand, and (4) rotating/twisting the wire-manipulating body along an axis parallel to the wires, while simultaneously drawing the plurality of wires from the
passages, as shown in FIG. 6. In this regard, the wire or conductor tips as well as a portion of the wire body is twisted/spliced together as the wire tool is slid or drawn (pulled) off the end of each wire forming a uniformly twisted or spliced wire bundle.

The apparatus and methods of the invention have been described with some particularity, but the specific designs, constructions and steps disclosed are not to be taken as delimiting the invention. Obviously modifications will make themselves apparent to those of ordinary skill in the art, all of which will not depart from the essence of the invention, and all such changes and modifications are intended to be encompassed within the appended claims.

What is claimed is:

1. A hand-held tool for splicing a plurality of corresponding wire tips of a plurality of corresponding wires together, comprising:
   a generally planar wire-manipulating body having an outside gripping surface sized to be hand-held and configured to transmit rotational force applied from the hand to the manipulating body, and an inside wire-engaging portion;
   wherein the wire-engaging portion includes a plurality of parallel passages each having a first opening located at a first end and a second opening located at a second end of the passage, the passages positioned in close proximity to each other with each passage sized to receive a corresponding wire tip to be spliced of a plurality of corresponding wires; and
   wherein after placement of each of the plurality of wire tips to be spliced through the passages from the openings on the same end of the passages, the plurality of wire tips are spliced together by the rotational force applied to the wire manipulating body about an axis parallel to the wire tips while simultaneously drawing the wire tips from the passages.

2. The tool of claim 1, wherein each of the passages are sized to receive a single corresponding wire of the plurality of corresponding wires.

3. The tool of claim 1, wherein each of the plurality of passages is cylindrical in shape.

4. The tool of claim 3, wherein the first opening and the second opening of each of the plurality of passages is circular in shape.

5. The tool of claim 4, wherein the first opening and second opening of each to the plurality of passages is tapered.

6. The tool of claim 1, wherein each of the passages are conical in shape.

7. The tool of claim 1, wherein the number of passages is equal to or greater than the number of corresponding wires.

8. The tool of claim 1, wherein the length of each passage is from about 0.0625 inches to about 0.125 inches.

9. The tool of claim 1, wherein the length of each passage is about 0.125 inches.

10. The tool of claim 1, wherein the wire-manipulating body is a substantially flat disc.

11. The tool of claim 1, wherein the outside gripping surface is knurled.

12. The tool of claim 1, wherein the outside gripping surface is grooved and includes a rubber insert.

13. A system for twisting a plurality of corresponding wires together, comprising:
   a plurality of corresponding wire tips to be spliced of a plurality of corresponding wires; and
   a hand-held tool for splicing the corresponding wire tips, the hand-tool comprising:
   a generally planar wire-manipulating body having an outside gripping surface sized to be hand-held and configured to transmit rotational force applied from the hand to the manipulating body, and an inside wire-engaging portion;
   wherein the wire-engaging portion includes a plurality of generally parallel passages each having a first opening located at a first end and a second opening located at a second end of the passage, the passages positioned in generally close proximity to each other with each passage sized to receive a corresponding wire of the plurality of corresponding wires; and
   wherein after placement of each of the plurality of wires through the passages from the openings on the same end of the passages, the plurality of wires are spliced together by rotating the wire manipulating body.

14. A method for twisting a plurality of corresponding wires together, comprising the steps of:
   providing a hand-held tool for splicing a plurality of corresponding wire tips of a plurality of corresponding wires together, comprising:
   a generally planar wire-manipulating body having an outside gripping surface and an inside wire-engaging portion; and
   wherein the wire-engaging portion includes a plurality of parallel passages each having a first opening located at a first end and a second opening located at a second end of the passage, the passages positioned in close proximity to each other with each passage sized to receive a corresponding wire tip to be spliced of a plurality of corresponding wires;
   inserting each of the plurality of corresponding wire tips to be spliced of the corresponding wires through the passages from the openings on the same end of the passages;
   grasping the wire manipulating body with one hand and the wires of the wire tips to be spliced near the wire-manipulating body with the other hand; and
   rotating the wire-manipulating body about an axis parallel to the wires while simultaneously drawing the corresponding wire tips to be spliced from the passages.

15. A tool for twisting together at least two wires, comprising:
   a generally planar body having a gripping portion generally at the perimeter thereof and a wire-engaging means spaced generally inwardly from the perimeter;
   said gripping portion configured to be gripped by a user's hand;
   said gripping portion and said wire-engaging portion configured and positioned relative to each other so that actuation of said body generally about an axis parallel to the wires results in twisting of the wires into engagement with each other.
16. Apparatus for electrically joining wires, including:
   a body portion capable of engaging at least two wires and
   manipulating them into a twisted relationship with each other;
   the body portion including an engagement section for
   engaging the wires;
   the body portion further including a rotation force applica-
   tion area, the rotation force application area posi-
   tioned generally coplanarly with and radially outward
   from the engagement section.

17. Apparatus for conducting electricity, comprising:
   a first wire;
   a second wire;
   a twisting element, the twisting element having one or
   more receiving areas for engaging the first and second
   wires;
   a contact portion spaced generally outwardly from the
   receiving areas and in a substantially coplanar rela-
   tionship with the receiving areas, the contact area config-
   ured to receive the application of rotational force about
   an axis generally parallel to the wires, said apparatus config-
   ured so that application of that force results in
   twisting engagement of the wires with each other.