



(51) International Patent Classification:

F16L 3/23 (2006.01) *H02G 3/30* (2006.01)
F16L 3/14 (2006.01) *H02G 7/10* (2006.01)
F16L 3/13 (2006.01)

(21) International Application Number:

PCT/US2018/036325

(22) International Filing Date:

06 June 2018 (06.06.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/515,601 06 June 2017 (06.06.2017) US

(71) Applicant: **HUBBELL INCORPORATED** [US/US]; 40 Waterview Drive, P.O. Box 1000, Shelton, CT 06484 (US).

(72) Inventors: **SHEA, Devan**; 60 Pheasant Lane, Hampstead, NH 03841 (US). **PARSONS, Sarah**; 64 Thomas Street, Medford, MA 02155 (US).

(74) Agent: **JACOBS, Brian**; Michael Best & Friedrich, LLP, 100 E. Wisconsin Ave, Ste 3300, Milwaukee, WI 53202 (US).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,

OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: SYSTEM AND METHOD FOR HANGING A CABLE

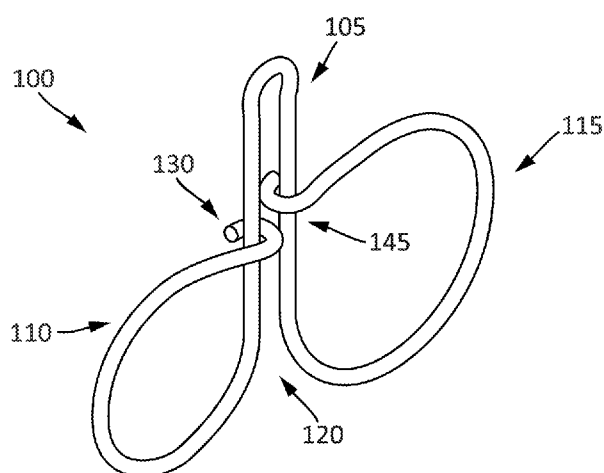


FIG. 1

(57) Abstract: A cable hanger includes a first cable support portion, a second cable support portion, and a hanger support portion. The first cable support portion is configured to hold one or more first cables. The second cable support portion is configured to hold one or more second cables. The hanger support portion is configured to retain the first cable support portion and the second cable support portion. The first cable support portion, the second cable support portion, and the hanger support portion are formed from a single piece of material.



SYSTEM AND METHOD FOR HANGING A CABLE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The application claims priority to the U.S. Provisional Patent Application No. 62/515,601, filed June 6, 2017, the entire contents of which is incorporated by reference herein.

FIELD

[0002] Embodiments relate to a system and method for hanging cable.

SUMMARY

[0003] Problems may arise when trenching for underground cable. For example, there may be flooding and/or deep mud. Additionally, material costs and/or labor costs may arise with various construction and/or environmental issues once trenching begins. Carrying cable above ground eliminates the problems associated with trenching and provides more predictable project costs.

[0004] In one embodiment, a cable hanger includes a first cable support portion, a second cable support portion, and a hanger support portion. The first cable support portion is configured to hold one or more first cables. The second cable support portion is configured to hold one or more second cables. The hanger support portion is configured to retain the first cable support portion and the second cable support portion. The first cable support portion, the second cable support portion, and the hanger support portion are formed from a single piece of material.

[0005] Another embodiment provides a method of retaining one or more cables. The method includes providing a single piece of material and forming, from the single piece of material, a hanger support portion. The method further includes forming, from the single piece of material, a first cable support portion configured to hold one or more first cables, and forming, from the single piece of material, a second cable support portion configured to hold one or more second cables.

[0006] In yet another embodiment, an apparatus for hanging cable includes a hanging portion, a first compartment configured to retain one or more first cables, and a second

compartment configured to retain one or more second cables. The hanging portion, the first compartment, and the second compartment are integrally formed as a single piece.

[0007] Other aspects of the disclosure will become apparent by consideration of the detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Fig. 1 is a perspective view of a cable hanger according to some embodiments.

[0009] Fig. 2 is a front view of the cable hanger of Fig. 1 according to some embodiments.

[0010] Fig. 3 is a top view of the cable hanger of Fig. 1 according to some embodiments.

[0011] Fig. 4 is a side view of the cable hanger of Fig. 1 according to some embodiments.

[0012] Fig. 5 is a front perspective view of the cable hanger of Fig. 1 retaining, or holding, a plurality of cables according to some embodiments.

[0013] Fig. 6 is a rear perspective view of the cable hanger of Fig. 1 retaining, or holding, a plurality of cables according to some embodiments.

[0014] Fig. 7 is a front and an enlarged perspective view of the cable hanger of Fig. 1 retaining, or holding, a plurality of cables according to some embodiments.

DETAILED DESCRIPTION

[0015] Before any embodiments of the present disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The present disclosure is capable of other embodiments and of being practiced or of being carried out in various ways.

[0016] Figs. 1-4 illustrate a cable hanger 100 according to some embodiments. The cable hanger 100 is configured to hold, or secure, one or more wires, or cables. In some embodiments, the cable hanger 100 is configured to secure one or more cables having a combined weight of

approximately 250kg to approximately 300kg. In some embodiments, the cable hanger 100 has a height of approximately 140 mm to approximately 215mm and a length of approximately 175mm to approximately 270mm.

[0017] The cable hanger 100 includes a hanger support portion 105, a first cable support portion, or compartment, 110, and a second cable support portion, or compartment, 115. The hanger support portion 105, first cable support portion 110, and second cable support portion 115 may be integrally formed as a single piece. In some embodiments, the cable hanger 110 is formed of a material (for example, a single cable of steel, a single rod of steel, a single cable of galvanized steel, a single rod of galvanized steel, a single cable of zinc plated steel, a single rod of zinc plated steel, a single cable of polyvinyl chloride (PVC) coated steel, a single rod of PVC coated steel, a single cable of PVC coated galvanized steel, a single rod of PVC coated galvanized steel, a single cable of powder coated steel, a single rod of powder coated steel, a single cable of powder coated galvanized steel, a single rod of powder coated galvanized steel, a single cable of PVC coated zinc steel, a single rod of PVC coated zinc steel, a single cable of powder coated zinc steel, a single rod of powder coated zinc steel, etc.). In some embodiments, the material is a rod having a thickness of approximately 4mm to approximately 7mm.

[0018] The hanger support portion 105 is configured to support, or secure, the first and second cable support portions 110, 115 to an external device (for example, a guy wire, or messenger wire). In the illustrated embodiment, the hanger support portion 105 is open at a bottom portion 120 (Figs. 1 and 2). In other embodiments, the hanger support portion 105 may form a closed loop. In some embodiments, the hanger support portion 105 has a radius of approximately 6mm to approximately 13mm.

[0019] The first cable support portion 110 is configured to support, or hold, one or more first cables 205 (Fig. 5). In the illustrated embodiment, the first cable support portion 110 forms a closed loop. However, in other embodiments, the first cable support portion 110 may be open at an upper portion 125. In some embodiments, the first cable support 110 has a radius of approximately 19mm to approximately 77mm (for example, approximately 38mm).

[0020] As illustrated, the first cable support portion 110 forms a loop, or ring-like structure, and is secured to the hanger support portion 105 by a first retainer 130. The first retainer 130

may be configured to “lock” and “unlock” the first cable support portion 110 in place. In some embodiments, for example as illustrated, the first retainer 130 is a hook. In such an embodiment, the first retainer 130 may have a radius of approximately 3mm to approximately 7mm.

[0021] As illustrated in Fig. 3, the first retainer 130 may include an angled portion 135. The angled portion 135 is configured to promote the “locking” and “unlocking” while providing a secure connection between the first cable support 110 and the hanger support portion 105. In some embodiments, the angled portion 135 has an angle of approximately 140° to approximately 170° (for example, 161°).

[0022] The second cable support portion 115 is configured to support, or hold, one or more second cables 210 (Fig. 5). In the illustrated embodiment, the second cable support portion 115 forms a closed loop. However, in other embodiments, the second cable support portion 115 may be open at an upper portion 140. In some embodiments, the second cable support 115 has a radius of approximately 19mm to approximately 77mm (for example, approximately 50mm). In some embodiments, the first cable support portion 110 and the second cable support portion 115 have substantially similar radii. In other embodiments, the first cable support portion 110 and the second cable support portion 115 have different radii.

[0023] As illustrated, the second cable support portion 115 forms a loop, or ring-like structure, and is secured to the hanger support portion 105 by a second retainer 145. The second retainer 145 may be configured to “lock” and “unlock” the second cable support portion 115 in place. In some embodiments, for example as illustrated, the second retainer 145 is a hook. In such an embodiment, the second retainer 145 may have a radius of approximately 3mm to approximately 7mm.

[0024] As illustrated in Fig. 3, the second retainer 145 may include an angled portion 150. The angled portion 150 is configured to promote the “locking” and “unlocking” while providing a secure connection between the second cable support 115 and the hanger support portion 105. In some embodiments, the angled portion 150 has an angle of approximately 140° to approximately 170° (for example, 161°).

[0025] Figs. 5 and 6 illustrate the cable hanger 100 secured to a wire 200 (for example, a guy wire, a messenger wire, etc.) and retaining a plurality of cables 205. In some embodiments, the plurality of cables 205 includes one or more first cables 210 and one or more second cables 215. In some embodiments, the one or more first cables 210 are direct-current (DC) cables, while the one or more second cables 215 are alternating-current (AC) cables. In other embodiments, the one or more first cables 210 are AC cables, while the one or more second cables 215 are DC cables. In yet another embodiment, the one or more first cables 210 include AC and DC cables and the one or more second cables 215 includes AC and DC cables. In yet other embodiments, the first and second cables 205, 210 may be a combination of various cables.

[0026] In operation, the cable hanger 100 is secured to the wire 200 via the hanger support portion 105, while the one or more first cables 210 are supported, or held, by the first cable support portion 110 and the one or more second cables 215 are supported, or held, by the second cable support portion 115. Thus, the one or more first and second cables 210, 215 are secured to the wire 200 via the cable hanger 100.

[0027] As illustrated in Fig. 7, the first and second cable support portions 110, 115 may be in a locked position or an unlocked position. In the locked position, the first and second retainers 130, 145 of the first and second cable support portions 110, 115, respectively, are secured to a portion of the hanger support portion 105. In the unlocked position, the first and second retainers 130, 145 are unsecured to the hanger support portion 105.

[0028] In some embodiments, the first retainer 130 is biased in a first direction 305. In such an embodiment, the first retainer 130 may be biased via the geometry of the first cable support portion 110. In such an embodiment, a user applies force to the first retainer 130 in a second direction 310 to unlatch the first retainer 130 from the hanger support portion 105. Once unlatched, the first retainer 130 is configured to move in the first direction 305, via the bias, and thus unlock the first cable support portion 110. Once unlocked, the one or more first cables 210 may be placed within the first cable support portion 110. The first cable support portion 110 may then be placed in the locked position to further secure the one or more first cables 210.

[0029] In some embodiments, the second retainer 145 is biased in the second direction 310. In such an embodiment, the second retainer 145 may be biased via the geometry of the second

cable support portion 115. In such an embodiment, a user applies force to the second retainer 145 in the first direction 305 to unlatch the second retainer 145 from the hanger support portion 105. Once unlatched, the second retainer 145 is configured to move in the second direction 310, via the bias, and thus unlock the second cable support portion 115. Once unlocked, the one or more second cables 215 may be placed within the second cable support portion 115. The second cable support portion 115 may then be placed in the locked position to further secure the one or more second cables 215.

[0030] Thus, the disclosure provides, among other things, an apparatus and method for retaining, or holding, cables. The apparatus and method described herein provide a user with the ability to hold cables above ground rather than trenching for underground cable routes. Various features and advantages of the disclosure are set forth in the following claims.

CLAIMS

What is claimed is:

1. A cable hanger comprising:
 - a first cable support portion configured to hold one or more first cables;
 - a second cable support portion configured to hold one or more second cables; and
 - a hanger support portion configured to retain the first cable support portion and the second cable support portion, wherein the first cable support portion, the second cable support portion, and the hanger support portion are formed of a single piece of material.
2. The cable hanger of claim 1, wherein the first cable support portion forms a first loop and the second cable support portion forms a second loop.
3. The cable hanger of claim 1, wherein the single piece of material is formed of at least one selected from group consisting of a single cable of steel, a single rod of steel, a single cable of galvanized steel, a single rod of galvanized steel, a single cable of zinc plated steel, a single rod of zinc plated steel, a single cable of polyvinyl chloride (PVC) coated steel, a single rod of PVC coated steel, a single cable of PVC coated galvanized steel, a single rod of PVC coated galvanized steel, a single cable of powder coated steel, a single rod of powder coated steel, a single cable of powder coated galvanized steel, a single rod of powder coated galvanized steel, a single cable of PVC coated zinc steel, a single rod of PVC coated zinc steel, a single cable of powder coated zinc steel, and a single rod of powder coated zinc steel.
4. The cable hanger of claim 1, wherein the first cable support portion includes a retainer configured to secure the first cable support portion to the hanger support portion.
5. The cable hanger of claim 1, wherein the second cable support portion includes a retainer configured to secure the second cable support portion to the hanger support portion.

6. The cable hanger of claim 1, wherein the one or more first cables includes at least one selected from a group consisting of an alternating-current (AC) cable and a direct-current (DC) cable.
7. The cable hanger of claim 1, wherein the one or more second cables includes at least one selected from a group consisting of an alternating-current (AC) cable and a direct-current (DC) cable.
8. The cable hanger of claim 1, wherein the hanger support portion is configured to retain the cable hanger to at least one selected from a group consisting of a guy wire and a messenger wire.
9. A method of retaining one or more cables, the method comprising:
 - providing a single piece of material;
 - forming, from the single piece of material, a hanger support portion;
 - forming, from the single piece of material, a first cable support portion configured to hold one or more first cables; and
 - forming, from the single piece of material, a second cable support portion configured to hold one or more second cables.
10. The method of claim 9, wherein the first cable support portion is formed into a first loop and the second cable support portion is formed into a second loop.
11. The method of claim 9, wherein the single piece of material is formed of at least one selected from a group consisting of a single cable of steel, a single rod of steel, a single cable of galvanized steel, a single rod of galvanized steel, a single cable of zinc plated steel, a single rod of zinc plated steel, a single cable of polyvinyl chloride (PVC) coated steel, a single rod of PVC coated steel, a single cable of PVC coated galvanized steel, a single rod of PVC coated galvanized steel, a single cable of powder coated steel, a single rod of powder coated steel, a single cable of powder coated galvanized steel, a single rod of powder coated galvanized steel, a

single cable of PVC coated zinc steel, a single rod of PVC coated zinc steel, a single cable of powder coated zinc steel, and a single rod of powder coated zinc steel.

12. The method of claim 9, wherein the first cable support portion includes a retainer configured to secure the first cable support portion to the hanger support portion.

13. The method of claim 9, wherein the second cable support portion includes a retainer configured to secure the second cable support portion to the hanger support portion.

14. The method of claim 9, wherein the one or more first cables includes at least one selected from a group consisting of an alternating-current (AC) cable and a direct-current (DC) cable.

15. The method of claim 9, wherein the one or more second cables includes at least one selected from a group consisting of an alternating-current (AC) cable and a direct-current (DC) cable.

16. The method of claim 9, wherein the hanger support portion is configured to retain first cable support portion and the second cable support portion to at least one selected from the group consisting of a guy wire and a messenger wire.

17. An apparatus for hanging cable, the apparatus comprising:
a hanging portion;
a first compartment configured to retain one or more first cables; and
a second compartment configured to retain one or more second cables;
wherein the hanging portion, the first compartment, and the second compartment are integrally formed as a single piece.

18. The apparatus of claim 17, wherein the first compartment includes a first loop and the second compartment includes a second loop.

19. The apparatus of claim 17, wherein the hanging portion, the first compartment, and the second compartment are formed of at least one selected from a group consisting of a single cable of steel, a single rod of steel, a single cable of galvanized steel, a single rod of galvanized steel, a single cable of zinc plated steel, a single rod of zinc plated steel, a single cable of polyvinyl chloride (PVC) coated steel, a single rod of PVC coated steel, a single cable of PVC coated galvanized steel, a single rod of PVC coated galvanized steel, a single cable of powder coated steel, a single rod of powder coated steel, a single cable of powder coated galvanized steel, a single rod of powder coated galvanized steel, a single cable of PVC coated zinc steel, a single rod of PVC coated zinc steel, a single cable of powder coated zinc steel, and a single rod of powder coated zinc steel.

20. The apparatus of claim 17, wherein the hanging portion is configured to secure the first compartment and the second compartment to at least one selected from a group consisting of a guy wire and a messenger wire.

1/4

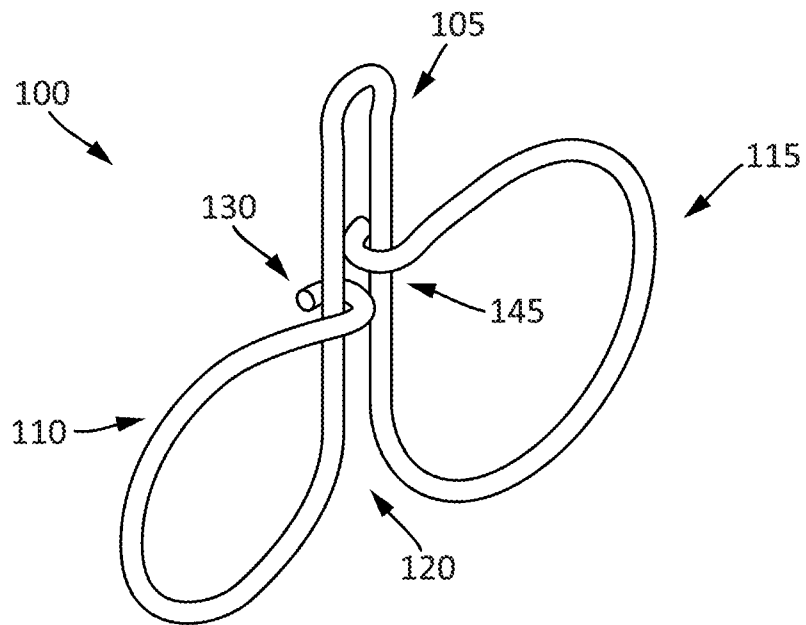


FIG. 1

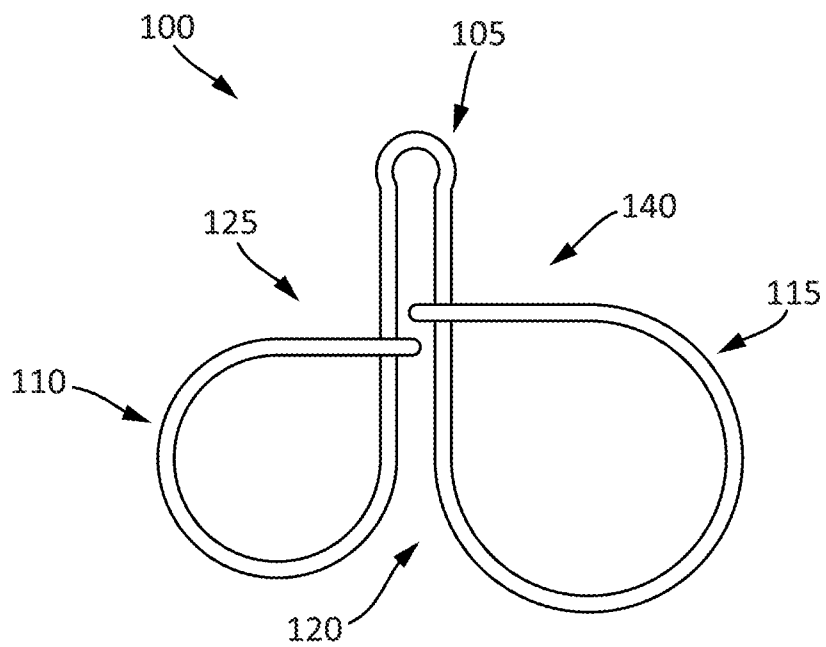
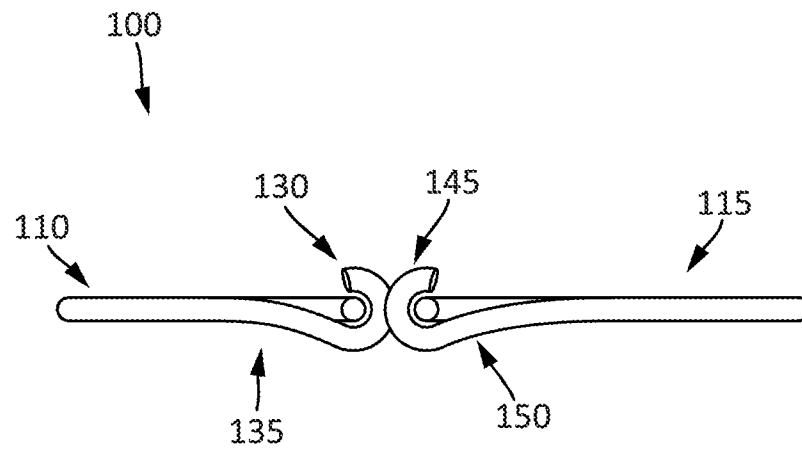
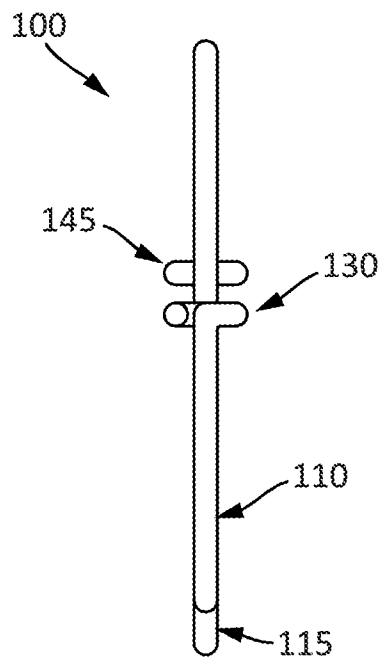
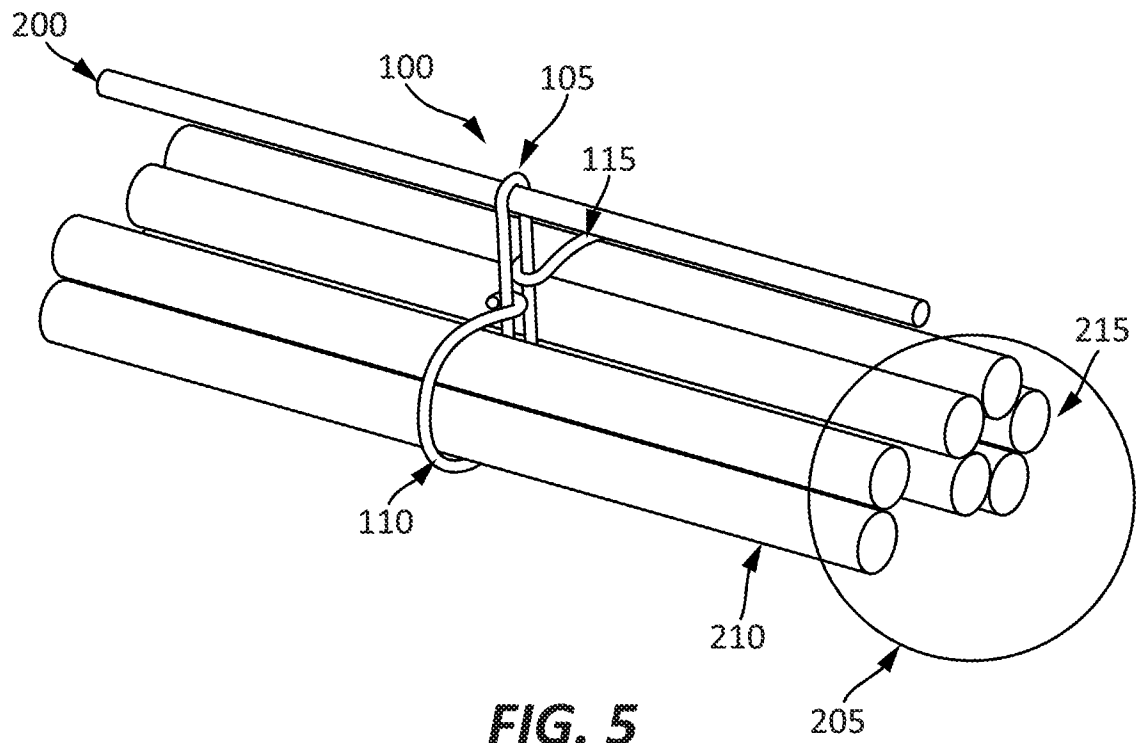
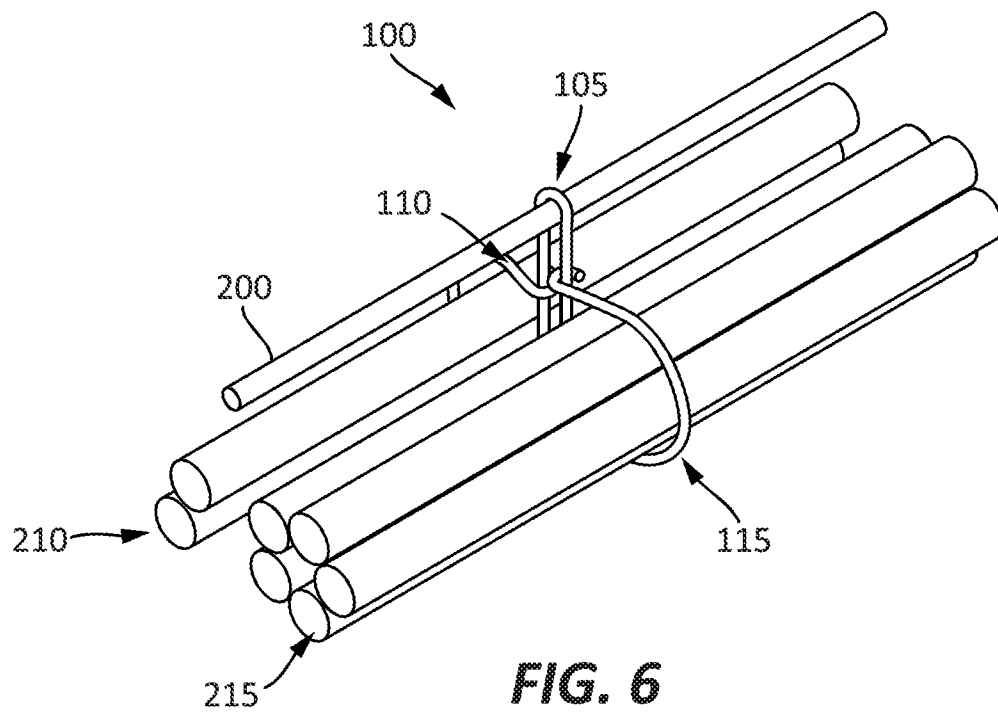


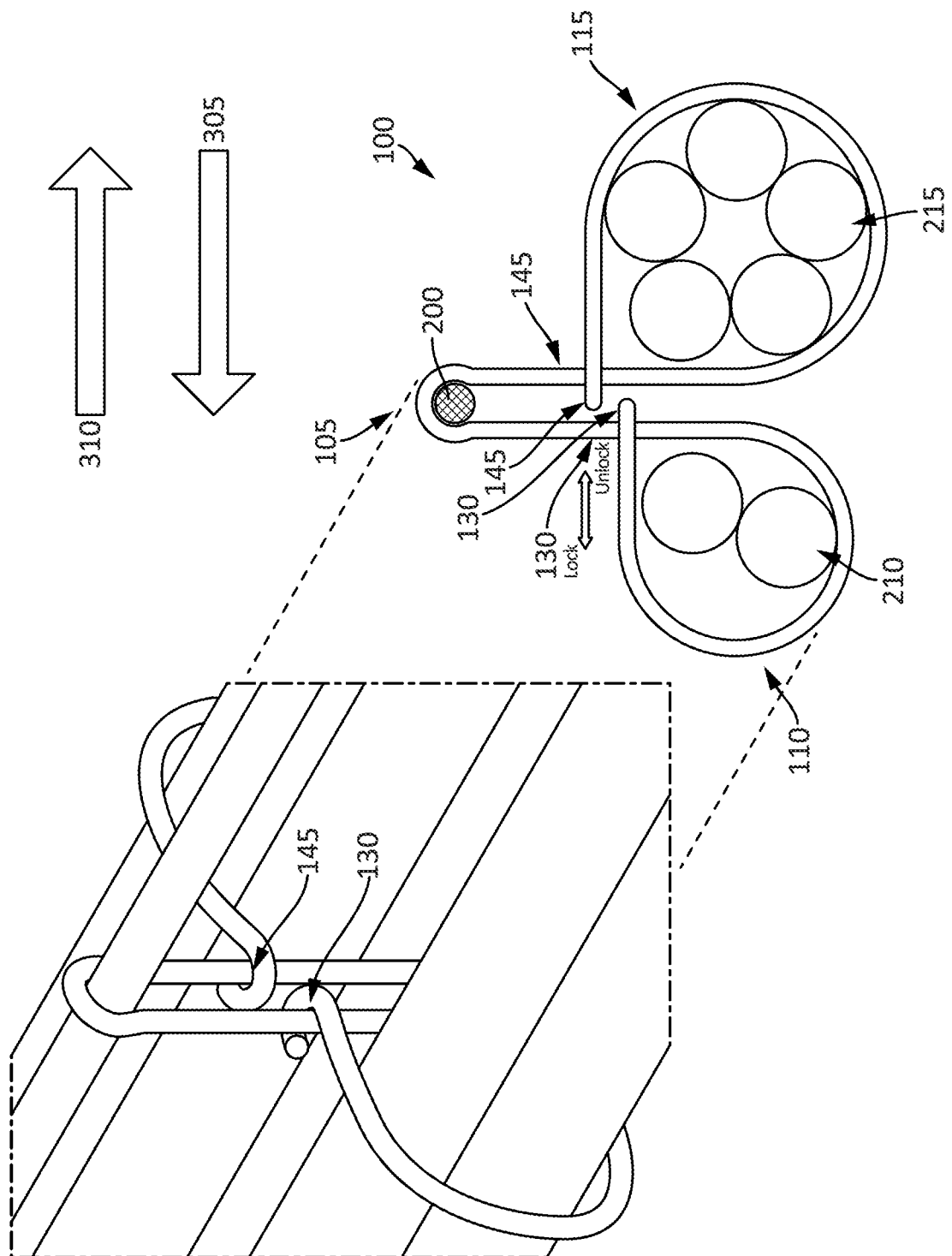
FIG. 2

2/4

**FIG. 3****FIG. 4**

3/4

**FIG. 5****FIG. 6**



754

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US18/36325

A. CLASSIFICATION OF SUBJECT MATTER

IPC - F16L 3/23, 3/14, 3/13; H02G 3/30, 7/10 (2018.01)

CPC - F16L 3/23, 3/14, 3/13; H02G 3/04, 3/0443, 3/30, 7/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/0153587 A1 (SMITH, A et al.) 02 June 2016; Figures 1 and 2; Paragraphs [0001]-[0002] and [0054]	1, 3, 6-9, 11, 14-17 and 19-20
X	US 3,136,515 A (POTRUCH, R) 09 June 1964; Figures 4 and 6; Column 2, Lines 32-33	1-2, 9-10 and 17-18
X	US 2005/0087662 A1 (JACOBS, W) 28 April 2005; Figures 2 and 7B; Paragraph [0024]	1 and 9
----- Y		4-5 and 12-13
Y	US 5,303,885 A (WADE, L) 19 April 1994; Figure 1; Column 3, Lines 39-41	4-5 and 12-13

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

07 August 2018 (07.08.2018)

Date of mailing of the international search report

19 SEP 2018

Name and mailing address of the ISA/

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-8300

Authorized officer

Shane Thomas

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774