

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PPC BROADBAND, INC.,
Petitioner,

v.

AMPHENOL CORPORATION,
Patent Owner.

Case No. IPR2022-00831

Patent No. 10,589,957

DECLARATION OF DR. CHARLES A. ELDERING

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 A. A Person of Ordinary Skill in the Art Would Have Been Motivated to Combine *Brochure* and *Blunt* and Expect Success39

 B. Independent Claim 946

 1. A method of installing a cable reel in a bag, comprising the steps of:46

2. “securing a first support frame to a base of a bag;”47

3. “securing a second support frame to a cover of the bag;”55

4. “placing a first flange on the first support frame, wherein the first flange includes a first hub portion;”56

5. “placing a second flange on the second support frame, wherein the second flange includes a second hub portion, wherein either the first hub portion or the second hub portion includes an elongated annular wall having a receiving area and the other of the first hub portion and the second hub portion includes a truncated annular wall receivable in the receiving area; and”60

6. “placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall.”66

C. Claim 10 - “The method of claim 9, further comprising the step of placing a coil of cable on the elongated annular wall.”68

D. Claim 11 – “The method of claim 10, wherein the coil of cable is arranged on a side thereof in the bag.”69

E. Claim 12 – “The method of claim 9, further comprising the step of dispensing cable of the coil of cable through a payout opening in the bag.”70

F. Claim 13 – “The method of claim 10, further comprising the step of removing the truncated annular wall from the elongated annular wall for replacement of the coil of cable with another coil of cable.”71

G. Claim 14 – “The method of claim 10, wherein the coil of cable lacks a support reel prior to the step of placing the coil of cable on the elongated annular wall.”74

H. Claim 15 – “The method of claim 10, wherein the step of placing the coil of cable on the elongated annular wall occurs before the step of placing the second flange to hold the coil of cable on the elongated annular wall and before the step of placing the second flange on the second support frame.”77

I. Claim 16 - “The method of claim 10, wherein the step of placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall occurs after placing the coil of cable on the elongated annular wall.”79

J. Claim 17 – “The method of claim 9, further comprising the step of strapping the first support frame to the base of the bag and strapping the second support frame to the cover of the bag.”79

K. Claim 18 - “The method of claim 9, wherein each of the first and second flanges has a central arbor opening.”81

L. Claim 19 – “The method of claim 18, further comprising the step of fitting a middle [flange support] of each of the first and second support[] frames into the central arbor opening of the first and second flanges, respectively.”83

X. [Ground 2] The Challenged Claims Are Unpatentable over *Brochure* in View of *Blunt* and *Johanson*86

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I. INTRODUCTION

1. I, Dr. Charles A. Eldering, submit this declaration to state my opinions on the matters described below.

2. I have been retained on behalf of PPC Broadband Inc. (“PPC”) as an independent expert for the above-identified *inter partes review* (“IPR”) proceeding involving U.S. Patent No. 10,589,957 (“the ’957 patent”). Although I am being compensated at a rate of \$475 per hour and reimbursed for reasonable out-of-pocket expenses, no part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

3. I have been asked to provide my technical review, analysis, and opinions regarding the ’957 patent.

II. QUALIFICATIONS AND BACKGROUND

4. I believe that I am well qualified to serve as a technical expert in this matter based upon my educational and work experience.

5. I have degrees in both physics and electrical engineering, as well as extensive experience in the telecommunications industry. My experience in coaxial cables and coaxial cable connectors started early in my career, during summer and part-time jobs as a lab technician while an undergraduate. These positions included working at Friden Mailing Equipment in Oakland, CA, the particle physics lab at Carnegie Mellon University, and at the nuclear geochemistry lab at the Mellon

Institute (jobs I held in the period of 1979–1981). In these positions, I was frequently responsible for installing connectors on coaxial cables that were used for interconnecting laboratory equipment. My later experience in the cable industry was gained during my time at General Instrument Corporation from 1993–1995. General Instrument was a significant supplier of equipment to the Multiple System Operators (MSOs). My work at General Instrument included research on noise in the return path of the cable plant, which is related in large part to the quality of the connector and coaxial cable in the plant. My relevant experience also includes work with John Mezzalingua Associates, Inc. (d/b/a PPC Broadband and now part of Belden), where I have been involved with numerous aspects of cable connectors from approximately 2004 to the present, including the installation of cable and cable connectors on various types of coaxial cable, as well as measuring the performance characteristics (e.g., return loss and insertion loss) of installed connectors. In addition to this professional experience, I am a licensed amateur radio operator, holding a General Class license issued by the Federal Communications Commission (FCC) and having the call sign of N3YRB, and having had the prior call signs of KB6ZIR and KD2WWP. I have been an amateur radio operator since approximately 1988, with a lapse in my license from approximately 2014 to 2021. Being an amateur radio operator frequently requires the deployment of antennas on a temporary or permanent basis, and generally

necessitates the use of extended runs of coaxial cable. I have personally been involved with the installation of numerous permanent and temporary antennas in locations ranging from roofs to tree branches.

III. MATERIALS CONSIDERED

6. In forming my opinions, I have reviewed the following documents provided to me by PPC's counsel ("counsel"):

Exhibit	Description
Ex. 1001	U.S. Patent No. 10,589,957 to Thakare et al. ("957 patent")
Ex. 1003	Prosecution History of the '957 patent
Ex. 1004	U.S. Patent Application Publication No. 2012/0168554 to Blunt et al. (" <i>Blunt</i> ")
Ex. 1005	U.S. Patent No. 6,145,780 to Fontana (" <i>Fontana</i> ")
Ex. 1006	Published brochure of PPC's Perfect Tote™ 500 Eco reel tote bag (" <i>Brochure</i> ") (Appendix 1)
Ex. 1007	Perfect Flex Broadband Coaxial Cable Packaging Options, http://www.ppc-online.com/Products/Coax_Cable/packaging-options.cfm , April 14, 2014
Ex. 1008	Complaint in <i>Times Fiber Communications, Inc. v. PPC Broadband, Inc.</i> , No. 1:21-cv-01823-UNA (D. Del. Dec. 27, 2021)
Ex. 1009	Declaration of Ms. Cary Mullin
Ex. 1010	Photograph of PPC's booth at SCTE's Cable-Tec Expo 2014 (September 2014) (Appendix 10)
Ex. 1011	U.S. Patent No. 8,016,222 to Galgano et al. (" <i>Galgano</i> ")

Exhibit	Description
Ex. 1012	U.S. Patent Publication No. US 2014/0312159 to Troitzsch et al. (" <i>Troitzsch</i> ")
Ex. 1013	U.S. Patent No. 7,938,357 to Johanson et al. (" <i>Johanson</i> ")
Ex. 1014	U.S. Patent No. 7,204,452 to Wilkinson et al. (" <i>Wilkinson</i> ")
Ex. 1015	U.S. Patent Application Publication No. 2010/0314484 to Houston et al. (" <i>Houston</i> ")
Ex. 1016	Printout of news article dated September 26, 2014, announcing PPC's exhibits at Cable-Tec Expo 2014 (Appendix 2)
Ex. 1021	Printout of Cable-Tec Expo 2014 webpage as of March 31, 2014
Ex. 1022	Printout showing the dates of exhibition at Cable-Tec Expo 2014 as of September 22, 2014
Ex. 1040	U.S. Patent No. 9,796,556 to Hill et al. (" <i>Hill</i> ")
Ex. 1041	U.S. Patent No. 7,121,501 to Lea (" <i>Lea</i> ")
Ex. 1042	U.S. Patent No. 5,551,647 to Browning (" <i>Browning</i> ")
Ex. 1043	U.S. Patent No. 5,348,241 to Huette (" <i>Huette</i> ")

IV. RELEVANT LEGAL STANDARDS

7. In preparing this declaration and forming my opinions, I am relying on certain legal principles that PPC's counsel explained to me. My understanding of these concepts is summarized below.

8. I have been asked to provide my opinions regarding whether claims 9-19 ("the Challenged Claims") of the '957 patent are unpatentable, either

because they are anticipated or would have been obvious to a person having ordinary skill in the art at the earliest claimed priority date of the '957 patent.

9. In forming my opinions expressed below, in addition to my own knowledge and experience based upon my work in the field of cable technology as described below, I have considered the documents listed in the Table in Section III above.

10. I have been informed by counsel that a patent claim is unpatentable as anticipated if each element of that claim is present either explicitly or inherently in a single prior art reference. I have also been informed that, to be an inherent disclosure, the prior art reference must necessarily disclose the limitation, and the fact that the reference might possibly practice or contain a claimed limitation is insufficient to establish that the reference inherently teaches the limitation.

11. I have been informed by counsel that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

12. I have further been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

13. When considering the issue of obviousness, I understand that I should consider (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) evidence of secondary indicia of nonobviousness. I have been informed that secondary indicia of nonobviousness include (i) “long-felt need” for the claimed invention, (ii) commercial success attributable to the claimed invention,

(iii) unexpected results of the claimed invention, and (iv) “copying” of the claimed invention by others.

A. Level of Ordinary Skill in the Art

14. I understand that a person of ordinary skill in the art is determined by considering (1) the type of problems encountered in the art, (2) prior art solutions to those problems, (3) the rapidity with which innovations are made, (4) the sophistication of the technology, and (5) the educational level of active workers in the field.

15. I understand that I must evaluate the '957 patent from the perspective of a person of ordinary skill in the art. That is, the '957 patent must be evaluated through the eyes of a person with ordinary skill in the relevant art at the time of the invention of this patent. It is my opinion that such a person of ordinary skill in the art as related to the '957 patent would hold at least a bachelor's degree in physics or engineering and experience with the installation of cable as of the date of invention of the '957 patent. If a person did not have a bachelor's degree, sufficient relevant experience with cable as used in the telecommunications industry could provide an acceptable substitute. Likewise, further education beyond a bachelor's degree could compensate for a deficiency in practical experience.

16. Based on my educational background and experience, I am qualified as at least a person of ordinary skill in the art with respect to the '957 patent. Thus,

I am familiar with the knowledge of the person of ordinary skill in the art as of the date of invention of the '957 patent. I am able to opine on how a person of ordinary skill in the art would have understood the disclosure and claims of the '957 patent, the disclosures of the prior art, the motivation to combine the prior art, and what combinations would have been obvious and would not have been obvious to one of ordinary skill in the art.

B. Claim Construction

17. I have been informed that in an IPR, claim terms should be construed under the same standard applied in federal district court cases. Under this standard, I have been informed that claim terms are generally given their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history pertaining to the patent. I understand, however, that claim terms are generally not limited by the embodiments described in the specification.

18. I understand that, in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have been informed that this additional evidence is often less significant and less reliable than the claims, specification, and prosecution history.

19. I have also been informed that claims should only be construed to the extent necessary to resolve any controversy.

V. THE '957 PATENT

A. Overview of the '957 Patent

20. I understand that the '957 patent issued on March 17, 2020, and is a continuation of Application No. 15/433,789, filed February 15, 2017, now U.S. Patent No. 9,862,566, which is a divisional application of U.S. Application No. 14/634,007, filed on February 27, 2015, now U.S. Patent No. 9,695,008. As such, I understand that the earliest claimed priority date of the '957 patent is February 27, 2015. For the purposes of this proceeding, I have been asked to assume that the invention date of the '957 patent claims is February 27, 2015.

21. The '957 patent discloses a method for installing cable on the cable reel 100 that “may be carried in a *conventional* shoulder bag or satchel, a cardboard or plastic box, and the like 101, with an opening 103 for easy payout of cable supported on the cable reel.” Ex. 1001, 1:15-17, 3:11-15 (emphasis added).

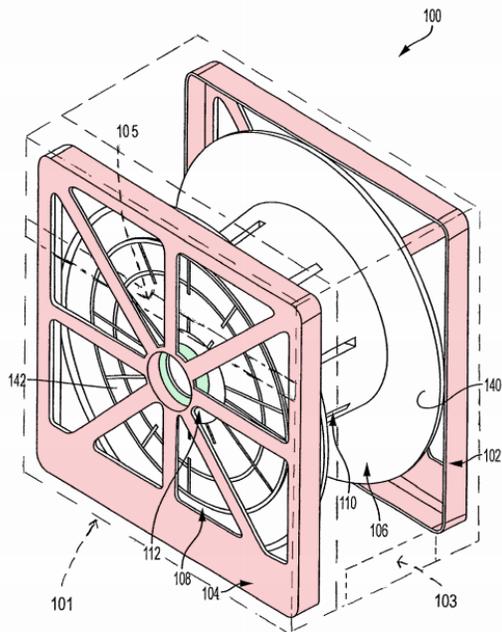


FIG. 1

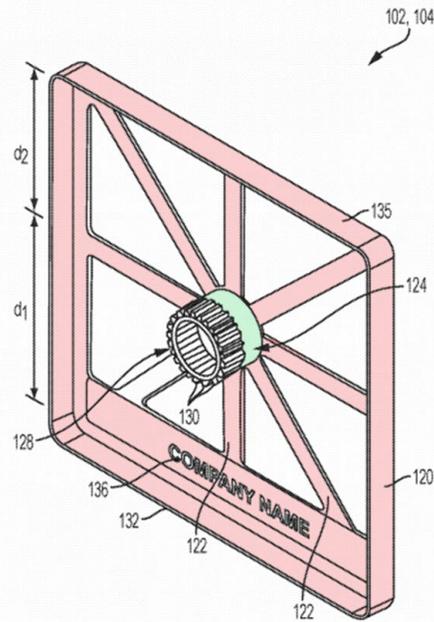


FIG. 2

Id., FIGS. 1-2 (annotated).

22. This cable reel 100 includes a pair of duplicate support frames 102 and 104—each located on opposing sides of a reel—and a pair of middle flange supports 124—each rotatably supporting opposing first and second flanges 106 and 108 connected by a hub member 110. *Id.*, 3:26-29, 3:37-39. To install cable reel 100 in a bag, the first support frame 102 is secured to the base of the bag and the second support frame 104 is secured to the bag cover. *Id.*, 5:23-26. With the cable coil positioned around hub member 110 between the flanges 106 and 108, the assembly is inserted into the bag (or box) 101 such that a middle flange support 124 of first support frame 102 (which is secured to the base of the bag) fits inside a

central arbor opening 144 of flange 106. *Id.*, 5:27-34. Similarly, when the bag is closed, the middle flange support 124 of the second support frame 104 (which is secured to the bag cover) fits in the central opening 144 of flange 108. *Id.*, 5:34-37. The operator can then pay out the cable through an opening 103 in the bag or box. *Id.*, 3:11-15, 5:37-40.

B. Claims of the '957 Patent

23. The '957 patent has 19 claims. Ex. 1001, 5:50-7:6. Among these claims, claims 9-19 are the Challenged Claims. Among the Challenged Claims, claim 9 is in independent form and claims 10-19 depend from independent claim 9.

24. Independent claim 9 recites:

A method of installing a cable reel in a bag,
comprising the steps of:

securing a first support frame to a base of a
bag;

securing a second support frame to a cover of
the bag;

placing a first flange on the first support
frame, wherein the first flange includes a first hub
portion;

placing a second flange on the second support
frame, wherein the second flange includes a second
hub portion, wherein either the first hub portion or
the second hub portion includes an elongated

annular wall having a receiving area and the other of the first hub portion and the second hub portion includes a truncated annular wall receivable in the receiving area; and

placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall.

C. Summary of the Prosecution History of the '957 Patent

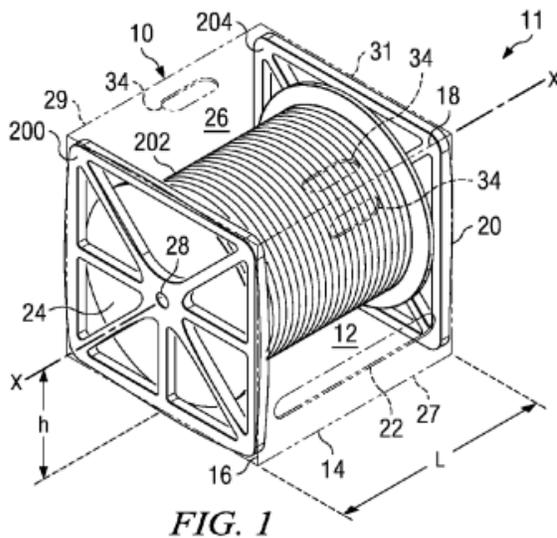
25. The '957 patent issued from U.S. Patent Application No. 15/833,091 ("091 application"), which was filed on December 6, 2017, claiming priority to two applications dating back to February 27, 2015. Ex. 1003, 144-179. All the originally filed claims were directed to a method of installing cable on a cable reel. Ex. 1001, 1:15-17; Ex. 1003, 150-153. After the first Office Action, the Patent Owner added the Challenged Claims, which are directed to installing a cable reel in a bag. Ex. 1003, 102-105.

26. The Examiner originally rejected the Challenged Claims as being obvious over *Galvano* (Ex. 1011) in view of *Troitsch* (Ex. 1012) and *Houston* (Ex. 1015). Ex. 1003, 48-55. For instance, the Examiner provided the following obviousness rationale for substituting *Galvano*'s cardboard box with old and well-known "bag" equivalents:

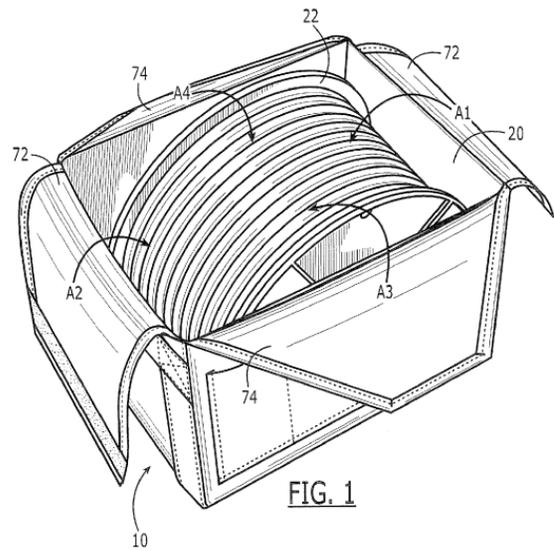
[B]oxes and bags are old and well known art *equivalents* for storing, transporting, and dispensing items stored in

them. Therefore, as taught by Houston et al. ..., it would have been obvious ... to store the cable reel of Galgano et al. in a bag to make the assembly lighter and easier to carry from one place to another.

Id., 52-53 (emphasis added).



Galgano



Houston

27. The Examiner’s finding that cable transporting boxes and bags are equivalent, making it obvious to substitute a box with a bag, is supported by the ’957 patent. The ’957 patent explains that its “cable reel 100 ... may be carried in a **conventional** shoulder bag or satchel, a cardboard or plastic box, and the like 101, with an opening 103 for easy payout of cable supported on the cable reel.”
 Ex. 1001, 3:11-15 (emphasis added).

28. The Patent Owner did not oppose the Examiner's finding that it would have been obvious to substitute *Galgano's* box with *Houston's* equivalent "bag." Ex. 1003, 40-45. Instead, it acquiesced and argued that "even if a bag, as taught by *Houston*, could be substituted for the carton of *Galgano*," *Galgano* and *Troitsch* do not disclose other features of the claimed cable reel. *Id.*, 43. Specifically, the Patent Owner argued that *Galgano* taught that its cable reel support members 200 and 204, which the Examiner relied upon to teach the claimed first and second support frames, were merely supported by the sides of the carton instead of being secured to the base and cover of *Galgano's* box, as required by independent claim 17 (now claim 9). *Id.*, 42-43. The Patent Owner also argued that *Galgano* and *Troitsch* did not teach a flange hub with a truncated annular wall received in an elongated annular wall of another flange hub as also required by this claim. *Id.*, 43-44.

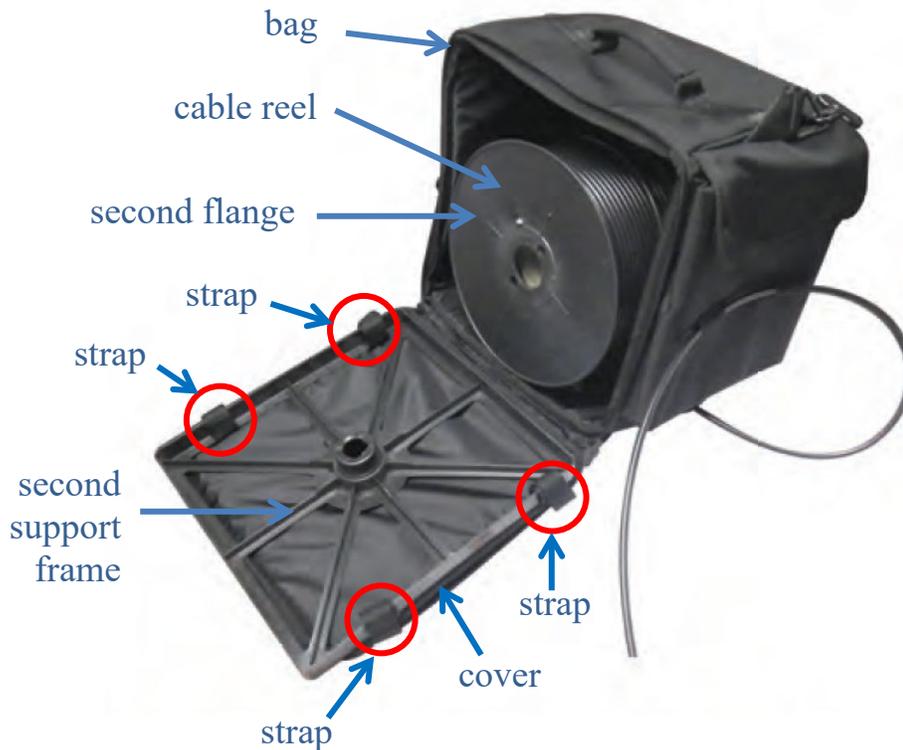
29. The Examiner then allowed the Challenged Claims. Ex. 1003, 3-9. In the Reasons for Allowance, the Examiner stated:

[T]he prior art of record, when taken as a whole, does not disclose or suggest the combination of Claim 17 [i.e., Claim 9 of the '957 patent], including a method of installing a cable reel in a bag, comprising the steps of *securing a first support frame to a base of a bag; and*

securing a second support frame to a cover of the bag in conjunction with the rest of the limitations of Claim 17.

Ex. 1003, 8 (emphasis added).

30. It is my opinion that the prior art applied below, which were not considered by the Examiner during prosecution, teaches all limitations of the Challenged Claims and renders them obvious. For instance, *Brochure* is the PPC brochure of the Perfect Tote™ 500 Eco cable reel tote bag (“the *Tote* bag”). *Brochure* discloses, *inter alia*, a bag for a reusable cable reel system and method that includes the step of securing via straps a support frame to a cover of a bag as shown below. *Brochure*’s installation method includes all the installation steps claimed in independent claim 9. The *Tote* bag as shown in *Brochure* includes frame hubs on its cover and base to rotatably support a cable reel therebetween. *Brochure*. *Brochure*’s installation method includes the steps of inserting the cable reel into the bag such that the center hole of one flange fits over the frame hub on the bag base, and closing the bag cover such that the frame hub on the bag cover fits into the flange opening of the opposite flange. *Id.*

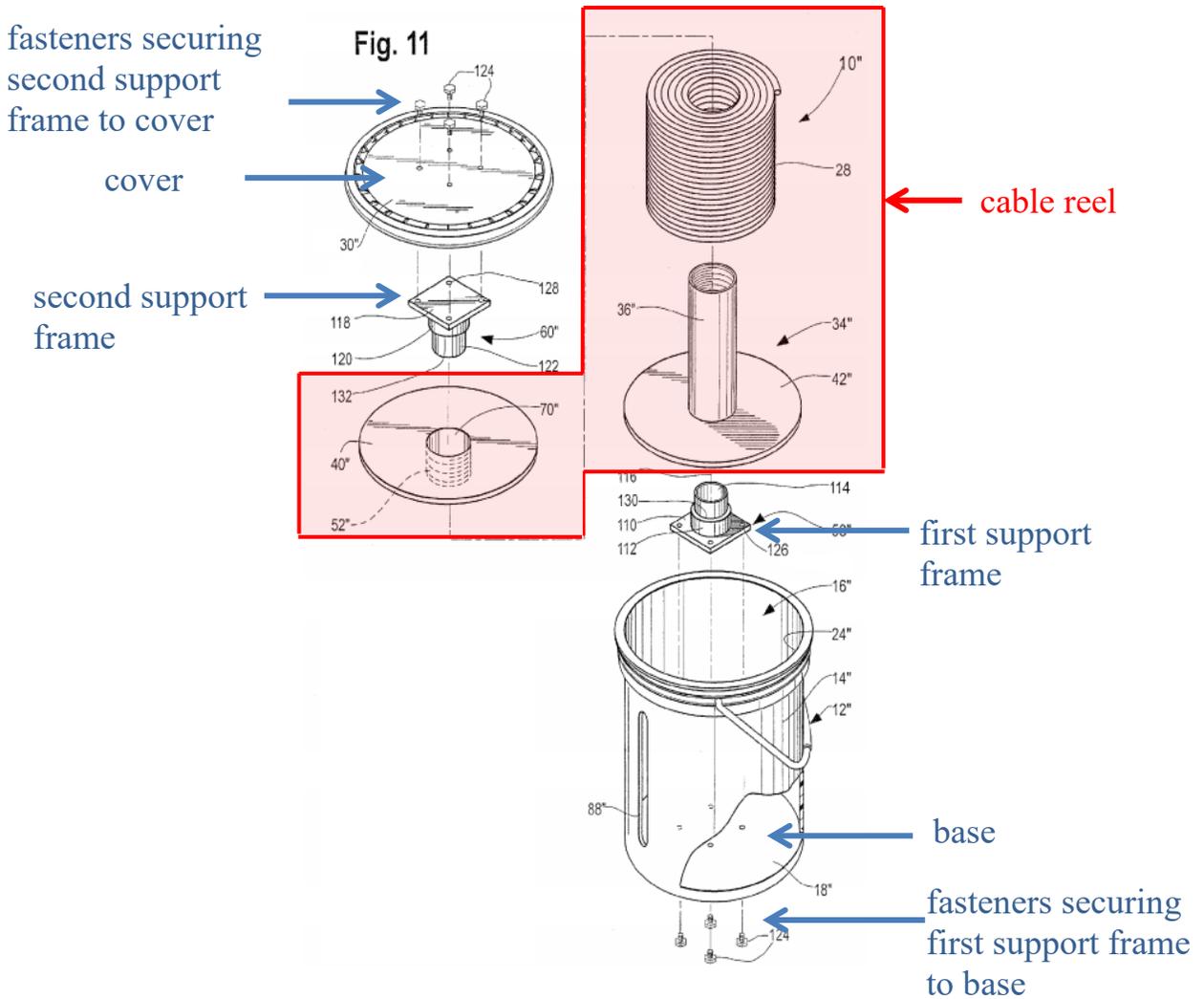
**How to use:**

1. Insert the cable reel into the bag so that the flange center hole fits over the frame hub and so that the cable pays straight across the bottom of the reel and out the opening of the bag.
2. Close the side panel and ensure that the frame hub is positioned in the cable reel flange opening.
3. Zip the side panel so it is secured.
4. When cable is not in use, place the end of the cable in the elastic holders on the front of the Perfect Tote™.

Brochure (annotated).

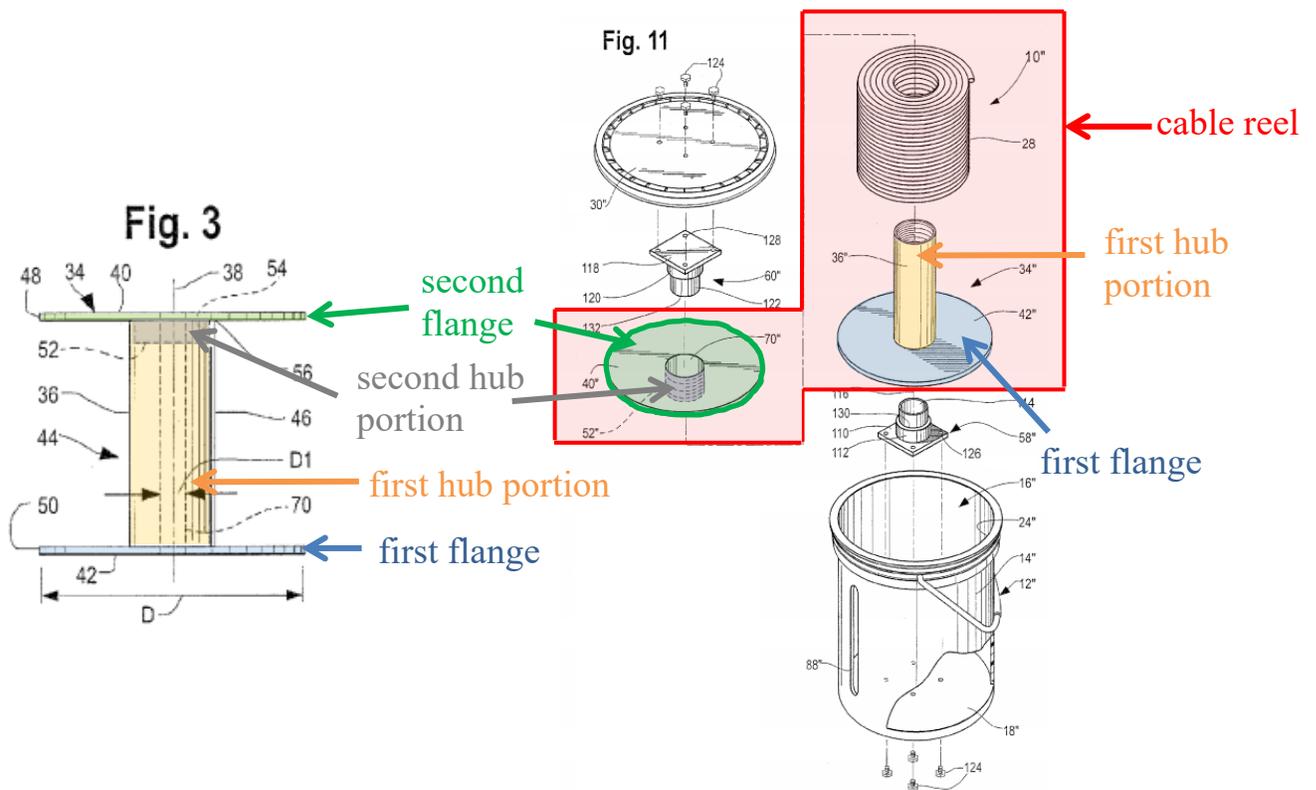
31. Similarly, *Blunt* discloses, *inter alia*, a reusable cable reel container system and method that includes the steps of securing a first support frame to a base side of a container and securing a second support frame to an opposing cover side of the container, as shown below. *Blunt's* installation method is similar to

Brochure's installation method. For example, *Blunt's* method includes the steps of securing a first support frame to a base side of a container, securing a second support frame to an opposing cover side of the container, inserting the cable reel into the container such that the center hole of one flange fits over the hub of the support frame on the container base, and closing the lid of the container such that the hub of the frame on the lid fits into the opening of the opposite flange.



Blunt, FIG. 11 (annotated).

32. Additionally, *Blunt* discloses all the claimed structural features of the cable reel in claim 9. For example, *Blunt* teaches the use of reusable cable reel that includes, *inter alia*, a hub portion of a first flange with a truncated annular wall received in an elongated annular wall of another hub portion of an opposing flange as shown below:



Blunt, FIGS. 3, 11 (annotated).

33. The Examiner correctly observed during prosecution of the '957 patent that it would have been obvious for a person of ordinary skill in the art to store the reusable cable reel of *Blunt* in a bag, such as taught by *Brochure*, to make the assembly lighter and easier to carry from one place to another. In my opinion, a

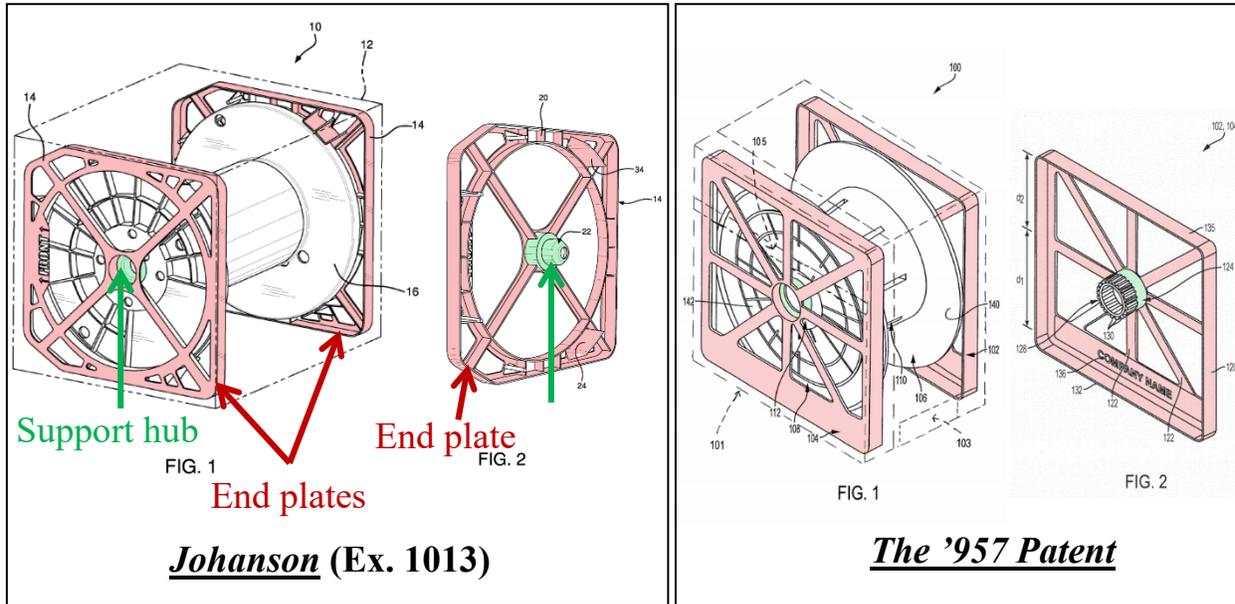
person of ordinary skill in the art would have been motivated to store *Blunt*'s reusable cable reel in the *Tote* bag of *Brochure* so that the cable supply in the cable reel would be replenished when it is exhausted. Because the prior art at issue renders obvious each and every one of the limitations of the Challenged Claims, it is my opinion that these claims are unpatentable.

VI. THE STATE OF THE ART OF CABLE COMMUNICATION BAGS AND DISPENSING MECHANISMS

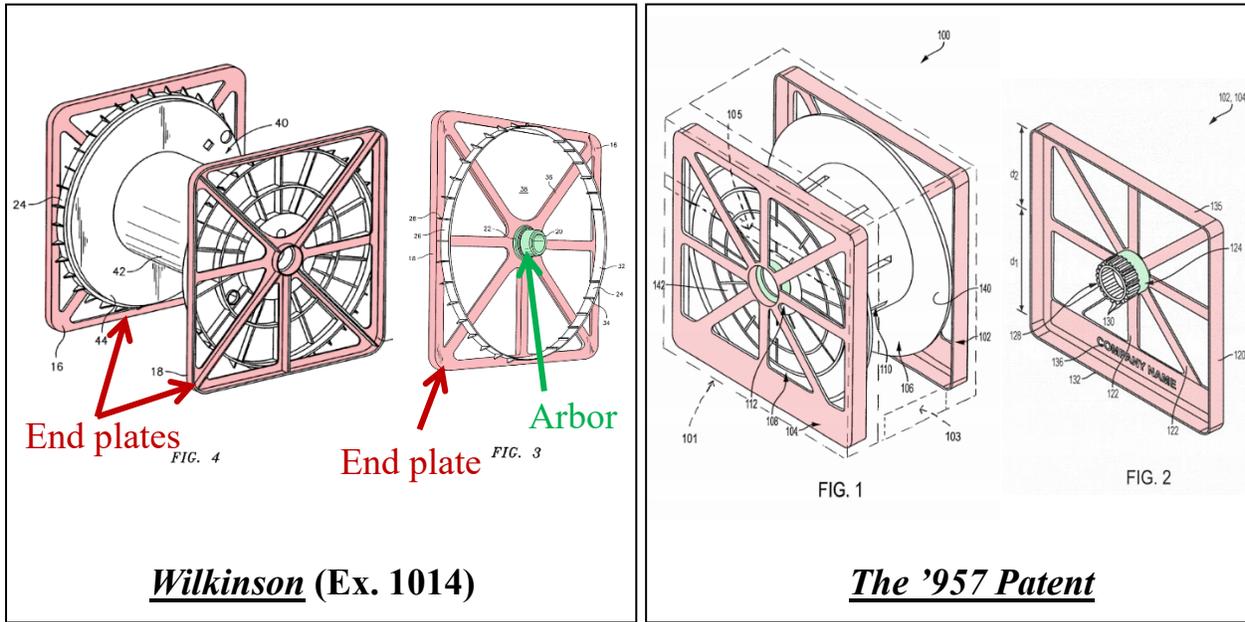
34. Telecommunication cable reel payout containers of different types (bags, plastic boxes, cardboard boxes, etc.) were well known in the prior art before February 27, 2015. In fact, the '957 patent admits that the alleged "invention relates to a cable reel ... carried in a *conventional* shoulder bag or satchel, a cardboard or plastic box, and the like ...," and that it was known that cable "installers usually use some type *of shoulder bag or other types of packaging solutions* with an opening for paying out the cable." Ex. 1001, 1:21-26, 3:11-15 (emphases added). That is, the '957 patent admits that, consistent with the Examiner's conclusions during prosecution (*see* Ex. 1003, 51-53), it was well known to carry a cable reel for payout in bags, cardboard boxes, plastic boxes, or other types of containers. *See* Ex. 1001,1:21-26, 3:11-15.

35. It was also well known at the relevant time of the alleged invention that a pair of duplicate support frames, coupled to opposite ends of the container in

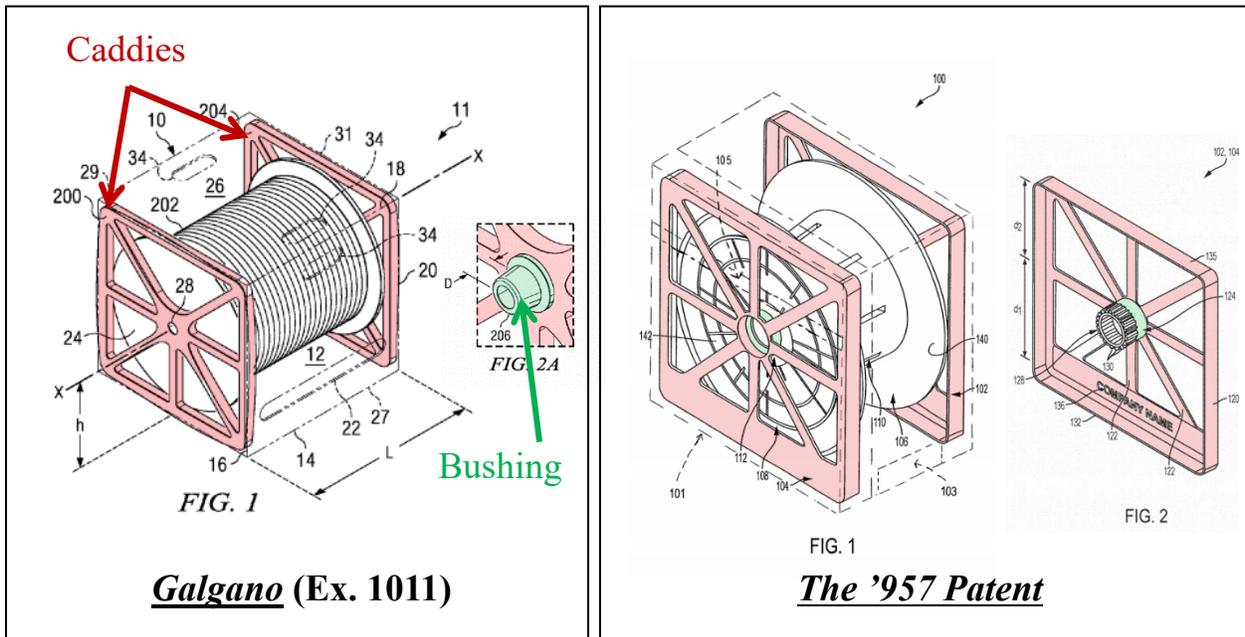
a mirror-symmetric manner, each frame including a frame hub, has been used to rotatably support a cable reel in the container for payout.



36. *Johanson* (Ex. 1013) discloses a box 12 for storing and dispensing optic cable from a spool 16. *Johanson*, 2:55-59. As in the '957 patent, in *Johanson*, a pair of duplicate end plates 14 are positioned in a mirror-symmetric manner on opposite sides of box 12 to support spool 16 therebetween (*id.*, 2:55-65, 3:5-10). And as in the '957 patent, in *Johanson*, each end plate 14 includes a support hub 22 that projects inwardly into a circular opening of spool 16 from opposite ends to rotatably support spool 16 in box 12 (*Johanson*, 2:55-3:10).



37. *Wilkinson* (Ex. 1014) discloses a box 12 (not shown in the figure above) for storing and dispensing cable from a spool 40. *Wilkinson*, 2:6-10, 2:66-3:7. In *Wilkinson*, a pair of duplicate end plates 16 are adhesively secured to opposite sides of box 12 to support spool 40 therebetween (*id.*, 2:14-19, 2:42-46, 3:54-57). As in the '957 patent, *Wilkinson* teaches the use of a cylindrical arbor 20 of end plates 16 that extends into a core of spool 40 from opposite ends to rotatably support spool 40 in box 12 (*Wilkinson*, 2:14-19, 42-46).

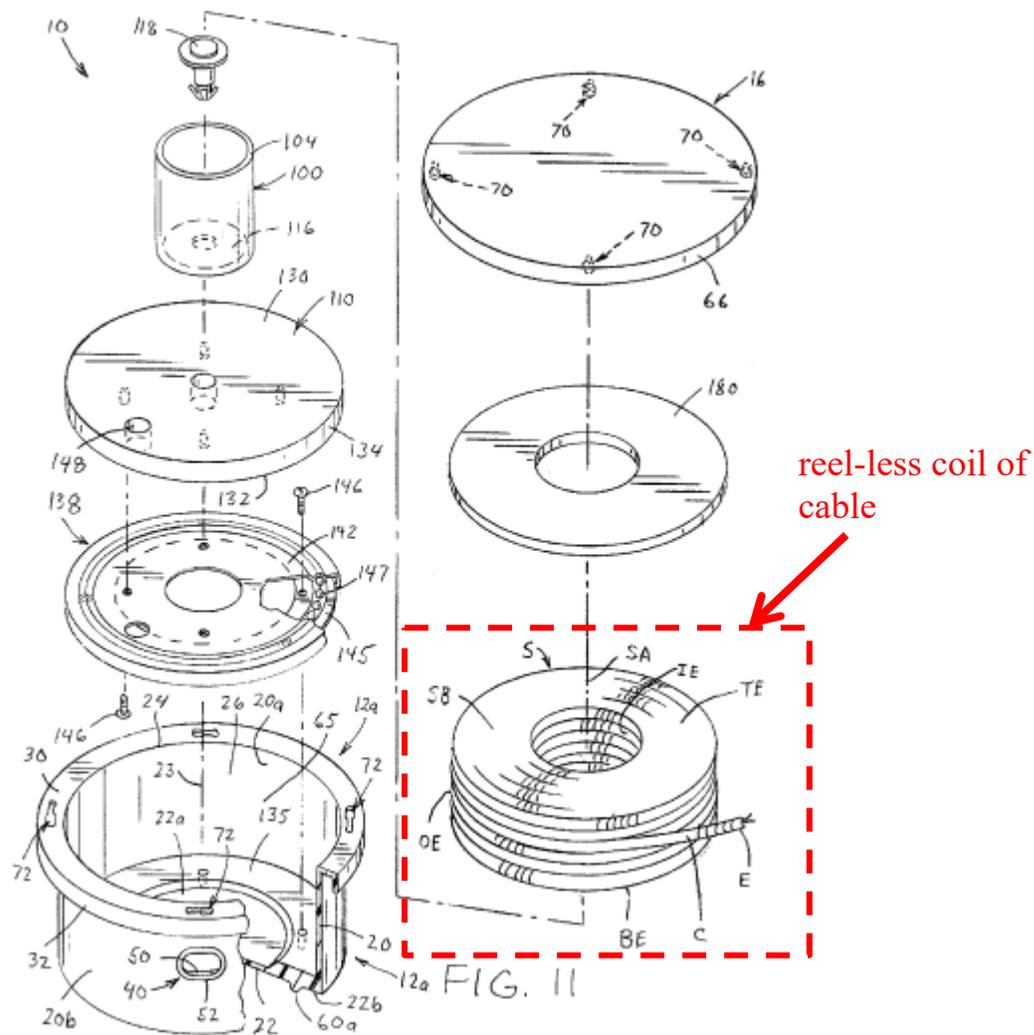


38. Likewise, *Galgano* (Ex. 1011) discloses a carton 10 with identical **left and right caddies 200, 204** positioned on opposite sides of carton 10. *Galgano*, 3:15-20, 3:58-67. As in the '957 patent, *Galgano* teaches the use of a centrally positioned **bushing 206** (*see id.*, FIG. 2A) on each caddy 202, 204 that extends into a central hole 208 of cable reel 202 from opposite ends to rotatably support cable reel 202 in carton 10 (*id.*, 4:1-30).

39. In each of these prior art references, the cable reel is supported in the container for payout in the same manner as disclosed in the '957 patent.

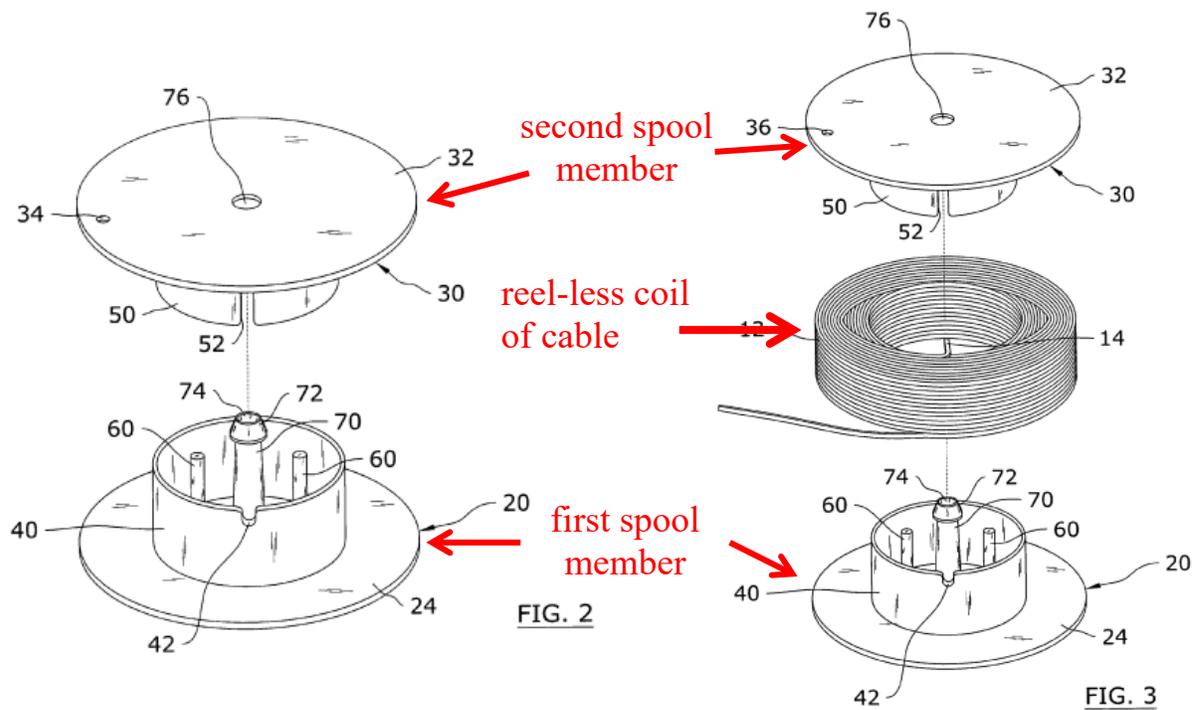
40. Indeed, duplicate frames on opposite ends inside cable payout containers to rotatably support the cable reel were notoriously old and well known at the time of the alleged invention because of their simplicity and cost savings resulting from having to manufacture only one part.

41. It was also well known that cable was commonly sold or provided without a central hub or reel (“reel-less” cable), with numerous prior art references teaching mechanisms for dispensing cable that did not come with a reel or a central hub. *Blunt* (Ex. 1004); *Fontana* (Ex. 1005); *Hill* (Ex. 1040), *Lea* (Ex. 1041); *Browning* (Ex. 1042); *Huette* (Ex. 1043).



Hill, FIG. 11 (annotated).

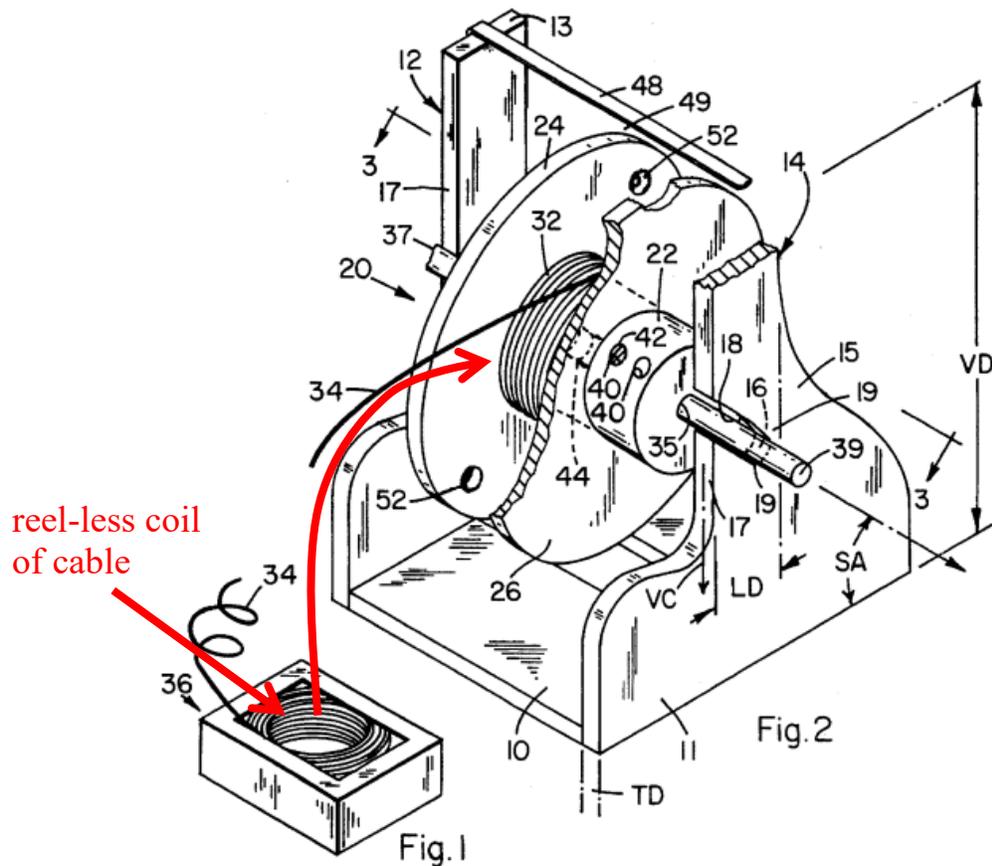
42. For example, as shown above, *Hill* (Ex. 1040) teaches a cable dispensing system for dispensing a reel-less coil of cable (“spool S”) without a central core. *Id.*, Abstract, 1:3-6, 4:27-41. *Hill*’s dispensing system can “smoothly dispense cable from a purchased spool of cable **having no central core** without kinking or tangling.” *Hill*, 3:24-48 (emphasis added);



Lea, FIGS. 2-3 (annotated).

43. Likewise, *Lea* (Ex. 1041) discloses a mechanism for dispensing a reel-less coil of cable (unspooled wire roll 12) by mounting the coil between a first spool member 20 having a first collar 40 and a second spool member 30 having a

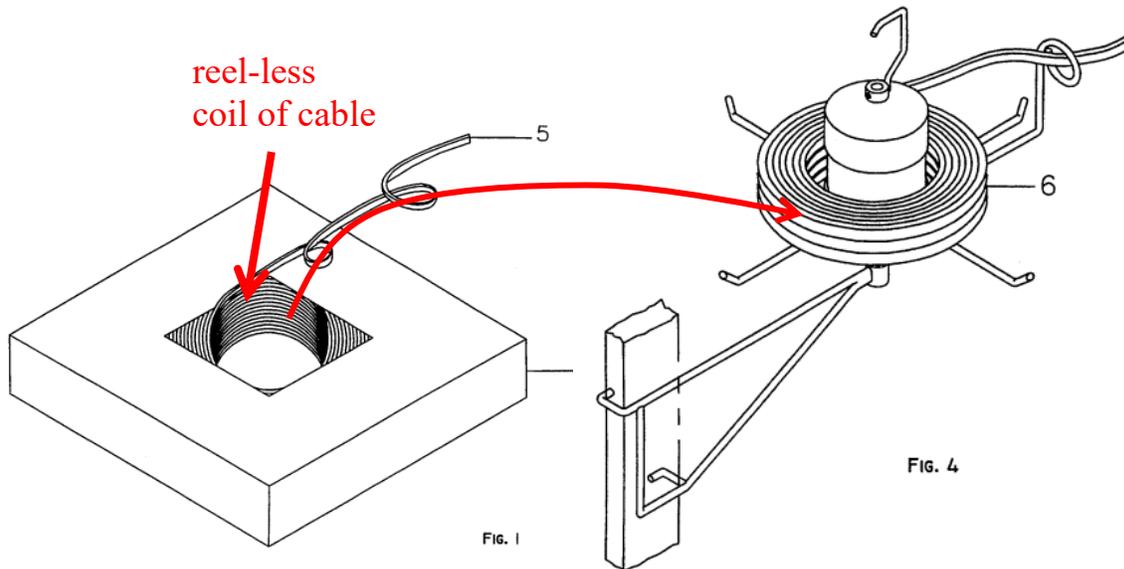
second collar 50. *Id.*, 3:27-47, 5:20-27. *Lea* makes several references to unspooled wire (*Lea*, 1:16-19, 1:48-53, 5:20-21), teaching that unspooled wire was common and there was a need for a mechanism to mount and dispense the unspooled wire, as shown above.



Browning, FIGS. 1-2 (annotated).

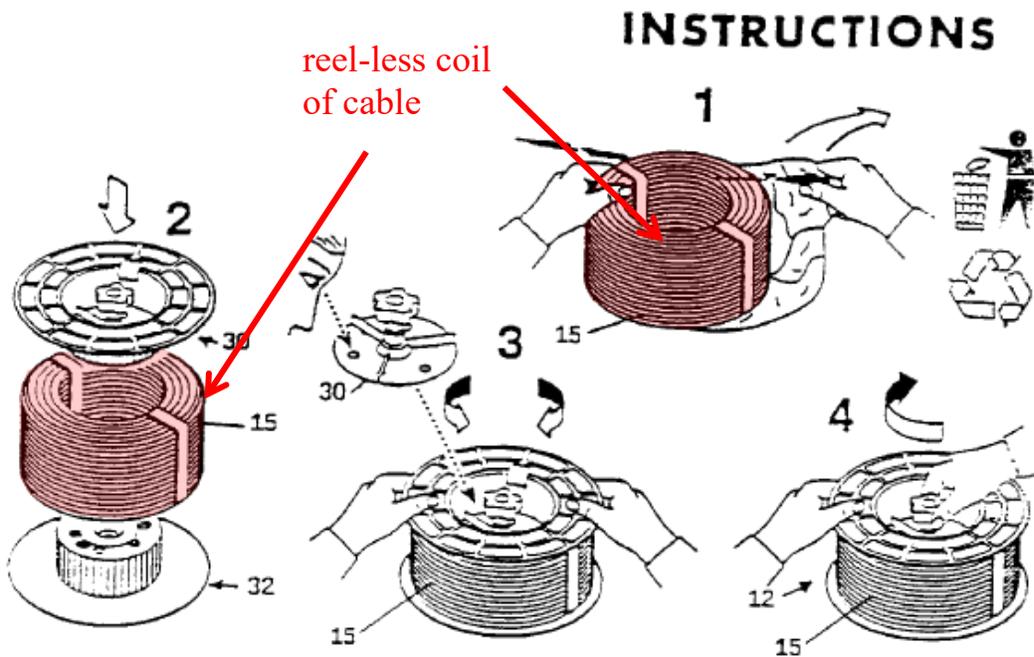
44. *Browning* (Ex. 1042) also discloses a cable dispensing device including a spool assembly 20 having a hub 22, wherein a prepackaged reel-less coil of cable (wiring cable 34) is removed from its box 36 and placed over the hub

and against a first rim 24, and a second rim 26 is placed over the hub, as shown above (*id.*, 19-22, 4:4-11, 5:13-52).



Huette, FIGS. 1, 4 (annotated).

45. *Huette* (Ex. 1043) also discloses a wire dispenser that dispenses a reel-less coil of cable (coiled wire 5) prepackaged in a cardboard container by mounting the coil on a rotating dispenser, as shown above. *Id.*, 2:33-35, 3:17-35. *Huette* describes in detail the disadvantages of dispensing the unspooled coiled wire from the container (*Huette*, 1:17-55, 3:19-32), thus providing the motivation for use of a dispensing mechanism.



Fontana, FIG. 6 (annotated).

46. *Fontana* (Ex. 1005) discloses an apparatus for dispensing a reel-less coil of cable without a spool (cable coil 15) “[t]o reduce costs and have a more ecological packaging.” *Id.*, 1:21-25, 4:33-57, FIG. 6. *Fontana* teaches that cable coils packaged with a spool are not ecological and are too costly. *Fontana*, 1:11-20. *Fontana* discloses using a container 11 housing a spool 12 with a cover 13 designed to be opened or closed for loading a cable coil 15 without a spool. *Id.*, 2:29-44, 4:47-53.

VII. DISCUSSION OF BROCHURE AND BLUNT

A. *Brochure* (Ex. 1006)

47. *Brochure* is the PPC brochure of the Perfect Tote™ 500 Eco cable reel tote bag (“the *Tote* bag”). I have been presented evidence in the form of a

declaration (Ex. 1009) from Cary Mullin and a declaration from Rebecca Firmani (Ex. 1038) that attest that the *Tote* bag was exhibited and *Brochure* was distributed at the Cable-Tec Expo[®] 2014 organized by the Society of Cable Telecommunications Engineers[®] (SCTE) and held between September 22-25, 2014, at the Colorado Convention Center in Denver, Colorado (Ex. 1021; Ex. 1022). I am aware that SCTE is the premier technical society of the telecommunications cable industry, and its annual conference and exhibition, called the Cable-Tec Expo[®], is attended by thousands of cable professionals “to discover and learn first-hand about the latest in cable telecommunications technology, products and services.” Ex. 1021; Ex. 1022. I have been advised by counsel that *Brochure* is considered to be publicly accessible to persons of ordinary skill in the art at least as of September 25, 2014, and therefore is prior art to the '957 patent.

48. *Brochure* depicts the *Tote* bag for cable payout like the “*conventional*” cable bag referred to in the '957 patent. As shown below, the bag includes a side panel (“cover”) that provides access to the bag, a base opposite the bag cover, and a payout opening for “smooth cable payout.” *Brochure*. The bag also includes a support frame (“second support frame”) having a frame hub in the center and secured to the cover with four straps. *Brochure*. *Brochure* also depicts a

cable reel including a first flange and a second flange on both sides of the reel, along with instructions of how to install the cable reel in the bag. *Brochure.*

Perfect Tote™ 500 Eco

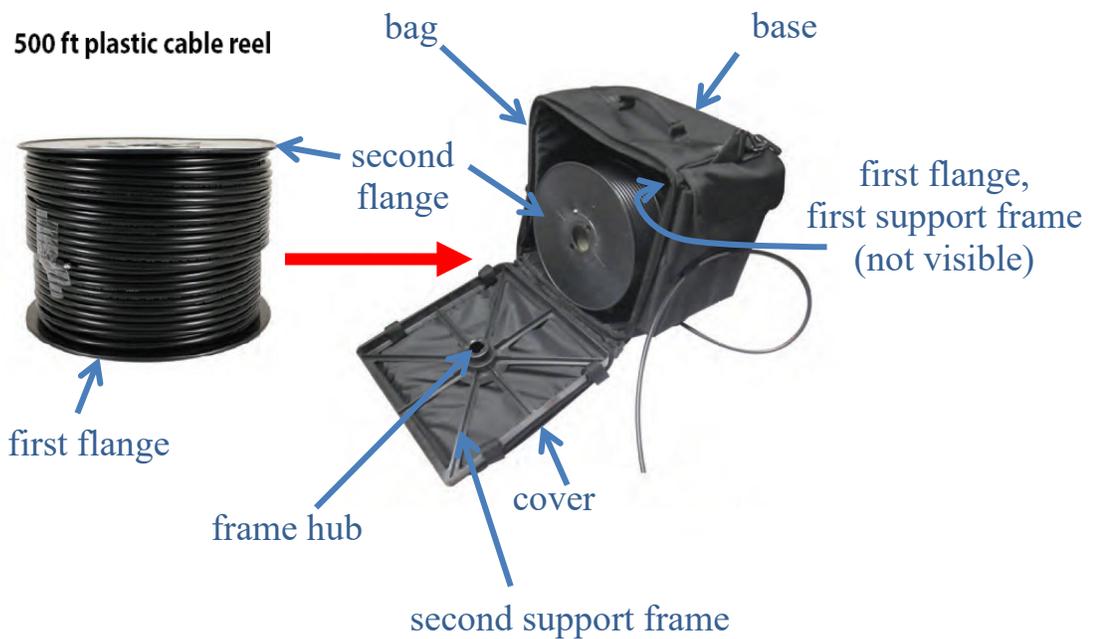
A Portable, **Environmentally-Friendly**
 Cable Tote for Technicians

Features:



How to use:

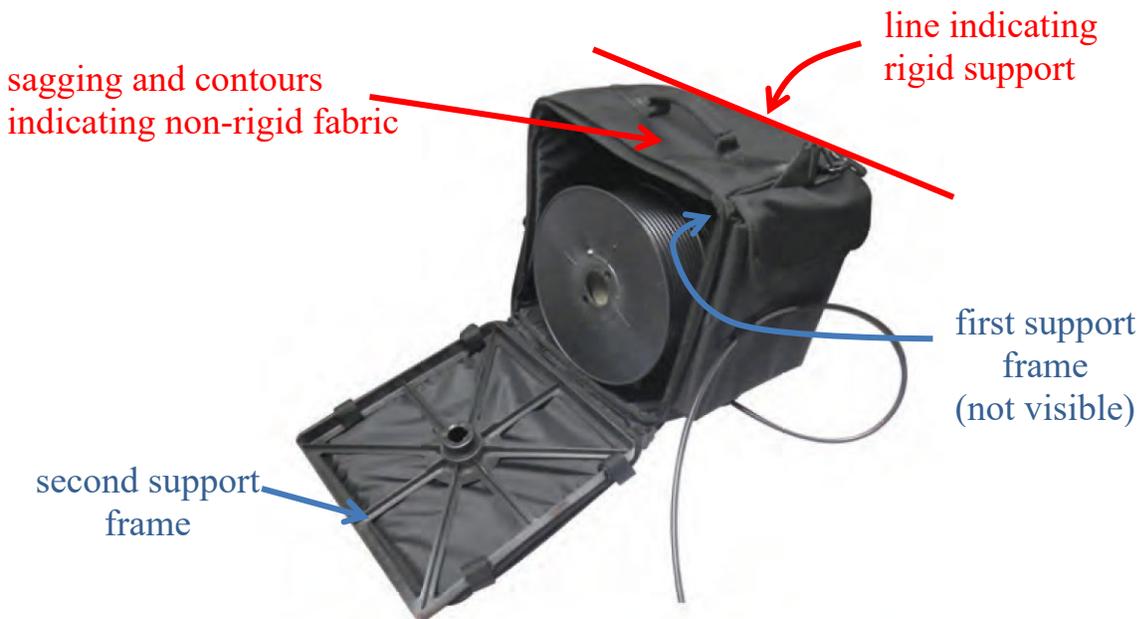
1. Insert the cable reel into the bag so that the flange center hole fits over the frame hub and so that the cable pays straight across the bottom of the reel and out the opening of the bag.
2. Close the side panel and ensure that the frame hub is positioned in the cable reel flange opening.
3. Zip the side panel so it is secured.
4. When cable is not in use, place the end of the cable in the elastic holders on the front of the Perfect Tote™.



Brochure (annotated).

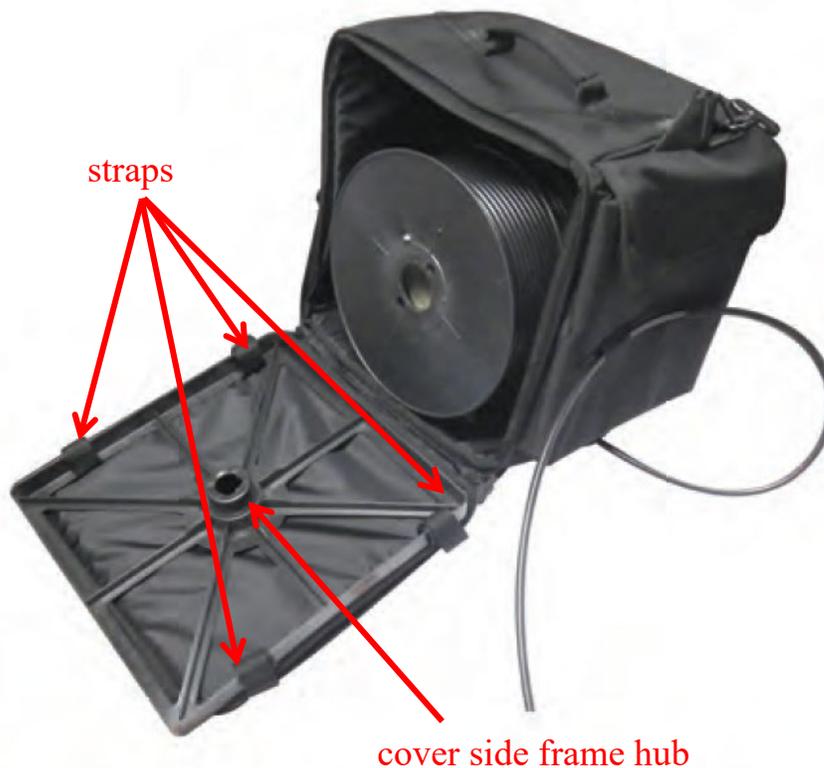
49. A person of ordinary skill in the art would have understood that the bag would have—and/or it would have been obvious to have—a duplicate frame secured to the base of the bag (“first support frame”) on the opposite end of the “second support frame” secured to the bag cover.

50. The *Tote* bag is made of a non-rigid material (e.g., a soft fabric-like material) and has frames inside the bag on both the cover and base sides of the bag. As shown above, since the *Tote* bag includes contours that are associated with a soft material rather than a rigid structure, a person of ordinary skill in the art would readily understand that the *Tote* bag is made of a material used for “soft-sided luggage,” rather than a rigid material, such as those used for “hard-side luggage.”



Brochure (annotated).

51. As shown in the figure above, and consistent with the use of a non-rigid fabric, the weight of the handle of the *Tote* bag pushes the unsupported fabric down, thus resulting in sagging near the handle area. The presence of a support frame on each side of the *Tote* bag is evident by observation of the support frame on the cover side and of the line formed on the opposite base side at the top of the bag, indicating the presence of a support frame similar or identical to that on the cover side.



Brochure (annotated).

52. The cover side frame hub in the *Tote* bag is visible in the photo shown above. This photo shows the frame hub is the central part of a support frame as its name implies. As can also be seen in this photo, the support frame on the cover side is secured to the inside of the bag cover via four (4) straps.

How to use:

1. Insert the cable reel into the bag so that the flange center hole fits over the frame hub and so that the cable pays straight across the bottom of the reel and out the opening of the bag.

Brochure.

53. The presence of the support frame in the base of the bag is further evident from Step 1 of the installation instructions disclosed in *Brochure* and reproduced above. That is, the base of the bag includes a frame hub that fits into the flange center hole when the cable reel is inserted towards the base of the bag. A person of ordinary skill in the art would readily recognize that the term “frame hub” refers to a central part of a support frame similar to the frame hub on the bag cover. Based on common practice in the art, as evidenced by *Wilkinson* (Ex. 1014) for instance and as discussed in Section VI, a person of ordinary skill in the art at the time of the alleged invention also would understand that the support frame that the frame hub of Step 1 is part of would be secured to the bag base similar to the frame hub on the bag cover. A person of ordinary skill in the art at the time of the alleged invention also would have understood that the *Tote* bag would not work

without a duplicate support frame secured to the base of the bag because the flanges of the cable reel would have to be rotatably supported in a stable and balanced way for the bag to function for cable payout. Thus, the *Tote* bag (and *Brochure*) includes a support frame secured to its base (cable reel receiving side), and this base side support frame includes the frame hub that fits into the flange center hole.

54. The mechanism for attaching the cover side frame is visible as four (4) straps securing the frame to the bag cover. A person of ordinary skill in the art at the time of the alleged invention would understand the necessity of securing the base side frame hub to the bag base to prevent the frame hub from moving and falling into the bag. Furthermore, based on the observed securing mechanisms on the bag cover, a person of ordinary skill in the art at the time of the alleged invention would understand that the *Tote* bag includes securing mechanisms to secure the base side frame to the base in the same manner as the cover side frame is secured to the bag cover.

B. *Blunt* (Ex. 1004)

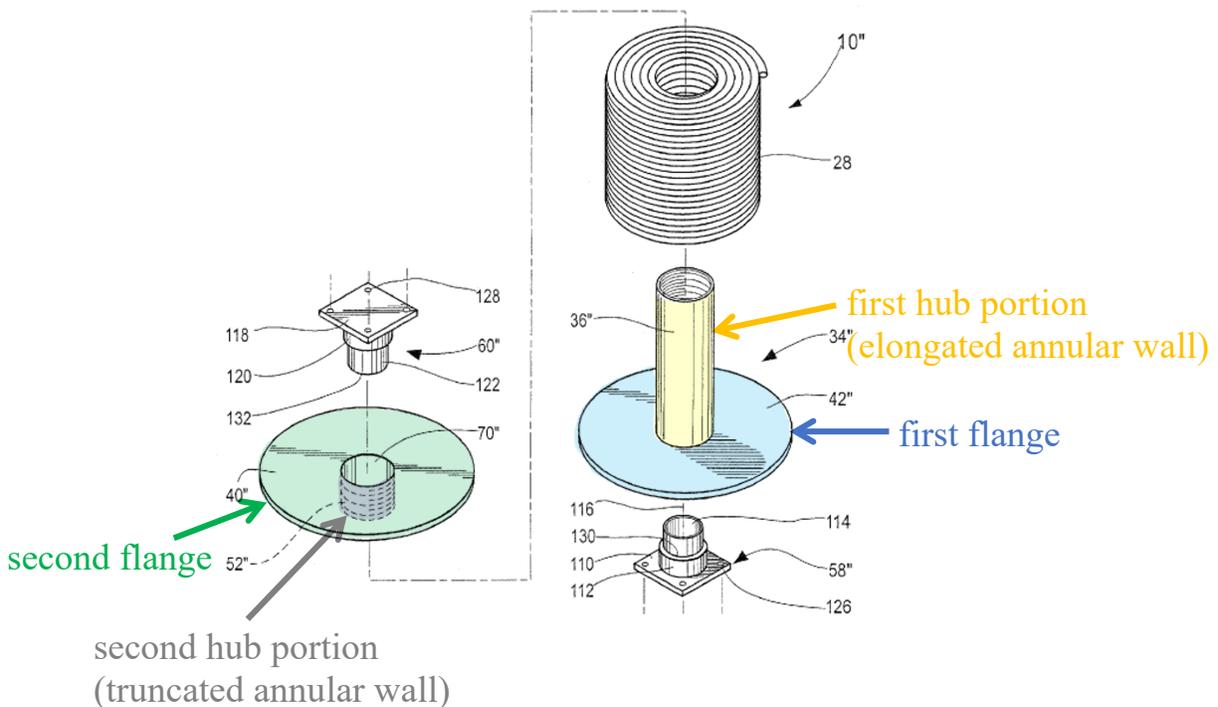
55. *Blunt* was published on July 5, 2012, which is more than a year before the assumed priority date of the '957 patent—February 27, 2015. I thus understand that *Blunt* is prior art to the '957 patent.

Blunt, FIG. 11.

57. As shown above, reel 34" is installed in container 12" using a pair of guide components 58", 60". *Id.*, [0095], [0097]. Guide components 58", 60" have the same construction with guide component 58" having a base 110 with a fixed annular sleeve 112. *See id.*, [0093]. A shaft 114 is mounted in the annular sleeve for rotation within the sleeve 112 about an axis 116. *Id.* Likewise, guide component 60" has a base 118 and an annular sleeve 120 with a shaft 122 rotatably mounted within sleeve 120. *Id.*, [0094]. Base 110 of guide component 58" is secured to the bottom wall 18" of container 12", and base 118 of guide component 60" is attached to a lid 30". *Id.*, [0095]. When guide components 58", 60" are secured in place, shafts 114, 122 of guide components 58", 60" are coaxial and project towards each other in a storage space 16" of container 12". *Id.*, [0093]-[0097]. Reel 34", with wrapped cable 28 around its core 36", is disposed in storage space 16" such that shafts 114, 122 of guide components 58", 60" are directed into a bore 70" defined through the reel 34" from opposite ends. *Id.*, [0097]. Thus, reel 34", which is captively located between the facing annular shoulders 130, 132 of guide components 58", 60", rotates around axis 116. *Id.*, [0097], [0082]. Container 12" has a payout opening 88 through which a free end portion P of the cable can be drawn and paid out from outside container 12". *Id.*,

[0082]. When the cable is drawn, reel 34" rotates within container 12" and the cable is smoothly paid out. *Id.*

58. *Blunt* discloses that reel 34" has a two-component construction, where (1) the first component includes a combined flange 42" and core 36", and (2) the second component includes a separate flange 40" with an associated stub component 52". *Id.*, [0096]. Core 36" includes an elongated annular wall extending about bore 70" defined through reel 34". *Id.* [0097]. Stub component 52" includes a truncated annular wall extending about bore 70".

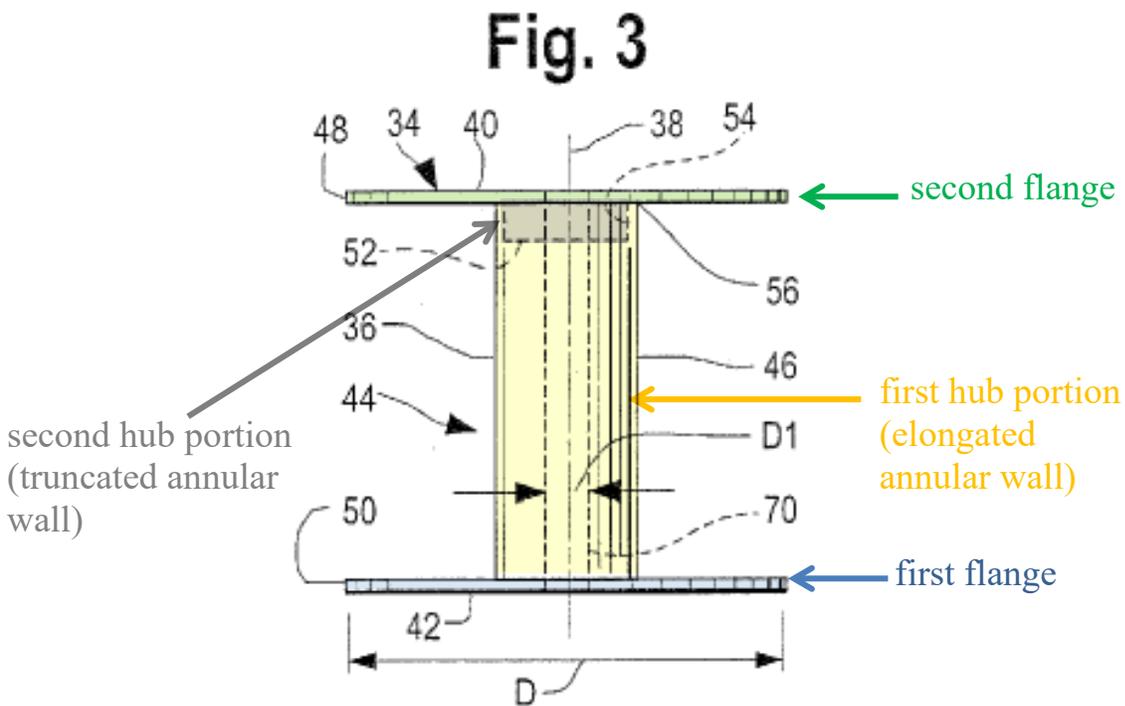


Blunt, FIG. 11 (annotated).

59. With reference to Figure 3 below, *Blunt* also discloses that

core 36 and flange 42 are formed together as an inseparable unit. The flange 40 is provided with a stub component 52 that can be nested in a complementary receptacle 54 on the core 36. The stub component 52 and core 36 may be *releasably maintained* together through frictional engagement. With this arrangement, the flange 40 can be *selectively separated* from core to allow the core end 56 to be directed through a pre-coiled supply of cable 28.

Id., ¶ [0073] (emphases added).



Id., FIG. 3 (annotated)

60. Thus, *Blunt* discloses placing a coil of cable on core 36" (elongated annular wall) of flange 42" and then placing stub component 52" (truncated annular wall) of flange 40" within a receiving area of core 36". *Id.*, [0073]. A person of ordinary skill in the art would have understood that core 36" constitutes "a first hub portion" and stub component 52" constitutes "a second hub portion," which are coupled together to form a hub structure to hold the supply of cable 28 between the flanges. *Blunt*, [0073]. Stub component 52" (truncated annular wall) is releasably receivable within core 36" (*Blunt*, [0073]) and would be removed from core 36" (elongated annular wall) "once the supply of cable 28 is exhausted to allow a new supply 26 of cable 28 to be replaced ... utilizing the reel 34 with a replenished supply of the cable 28." *Blunt*, [0089].

VIII. CLAIM CONSTRUCTION

61. As I discussed above, I have been informed that for purposes of IPRs, the standard for claim construction is the same as that applied in federal district court litigation. I have been asked to assume that the claim terms have their plain and ordinary meaning to a person of ordinary skill in the art in light of the specification and the prosecution history of the '957 patent. I also have been advised that the most persuasive evidence on claim construction is generally within the words of the claim itself and the disclosure of the specification, including any express definitions set forth in the written description of the invention. For the

purposes of this proceeding, in my opinion, no terms need construction and I apply the plain and ordinary meaning of each claim term throughout this declaration.

IX. [GROUND 1] THE CHALLENGED CLAIMS ARE OBVIOUS OVER *BROCHURE* IN VIEW OF *BLUNT*

62. The combination of *Brochure* and *Blunt* discloses and/or suggests each and every element of the Challenged Claims of the '957 patent. For instance, *Brochure* discloses a cable reel bag and a method for installing a cable reel in the bag. *Blunt* discloses a reusable cable reel that is compatible with the *Tote* bag and methods for installing the reusable reel in a container. *Id.* A person of ordinary skill in the art at the time of the alleged invention would have found it obvious to modify *Brochure*'s reel with *Blunt*'s reel structure or substitute *Brochure*'s reel with *Blunt*'s reel structure to, for instance, replenish the supply of cable in *Brochure*'s reel when it is exhausted in an environmentally friendly way. *Blunt*, [0107]. A person of ordinary skill in the art at the time of the alleged invention also would have found it obvious to modify *Brochure*'s installation method with *Blunt*'s methods for installing a reusable reel for similar reasons.

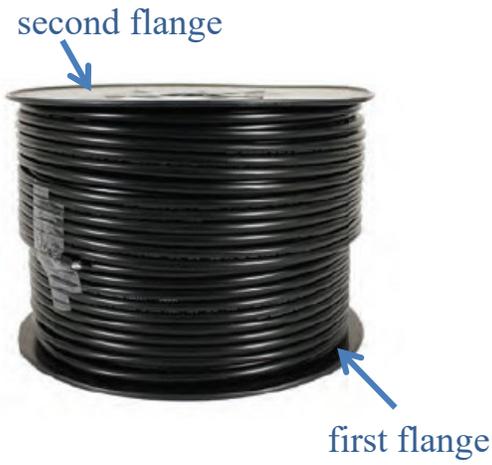
A. A Person of Ordinary Skill in the Art Would Have Been Motivated to Combine *Brochure* and *Blunt* and Expect Success

63. *Brochure* discloses that the *Tote* bag is an "Environmentally-Friendly" option for cable payout. *Brochure*. *Blunt* discloses a reel 34" with a hub construction that would be replenished with a new supply of cable when the cable

supply in the reel is exhausted such that the reel would be reused in “an environmentally friendly manner.” *Blunt*, [0019], [0073], [0089], [0107]. A person of ordinary skill in the art at the time of the alleged invention would have understood that the ability to replenish cable in *Brochure*’s reel would be environment friendly because it would save cost and reduce waste since the entire cable reel does not have to be disposed. *Blunt*, [0019] (“[O]nce the supply of cable is exhausted, the installer must appropriately dispose of the reel and container. With the ever-increasing concern about environmental impact, disposal of these components becomes a problem.”); *see also Fontana*, 1:21-25, 4:33-57, FIG. 6 (disclosing an apparatus for dispensing a reel-less coil of cable without a spool “[t]o reduce costs and have a more ecological packaging”).

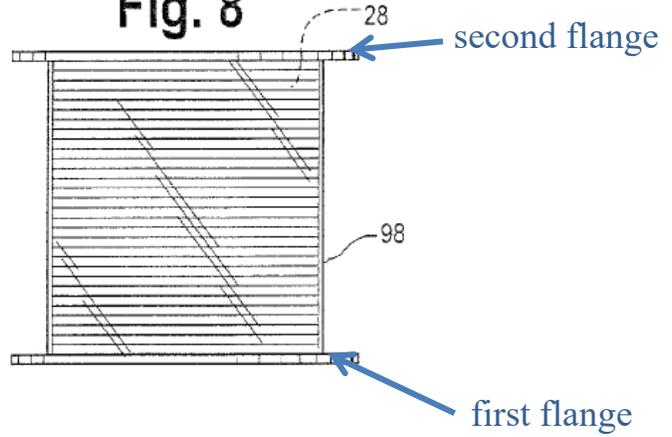
64. A person of ordinary skill in the art at the time of the alleged invention would have expected success in modifying *Brochure*’s method of installing a cable reel in the bag with *Blunt*’s methods of installing a reusable reel or reel structure because the modification would merely involve using a known technique to improve similar devices and methods in the same way taught. For instance, both *Brochure* and *Blunt* disclose using containers to transport a cable reel and payout cable without needing to remove the reel from the container. Both *Brochure* and *Blunt* disclose using reels having flanges on both sides with a coil of cable held therebetween, as shown below:

500 ft plastic cable reel



Brochure

Fig. 8



Blunt

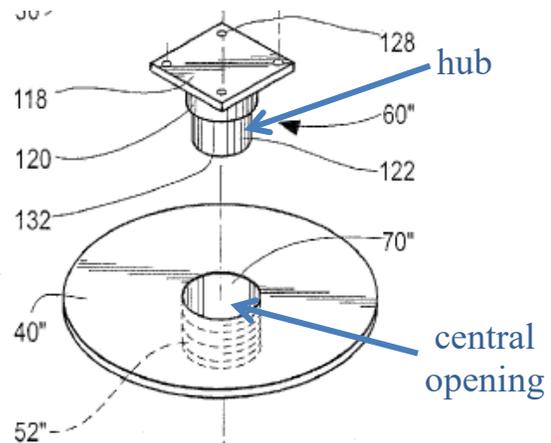
65. Both reels have central openings for rotating about a hub, as shown below:

500 ft plastic cable reel

central opening



1. Insert the cable reel into the bag so that the flange center hole fits over the frame hub and so that the cable pays straight across the bottom of the reel and out the opening of the bag.
2. Close the side panel and ensure that the frame hub is positioned in the cable reel flange opening.



“To interact with the guide components 58, 60, the core 36 is provided with a central throughbore 70 with a diameter D1 that is slightly greater than the diameters of the free end surfaces 72, 74 of the guide components 58, 60, respectively.”

Brochure

Blunt, [0075]

66. Both *Brochure* and *Blunt* disclose captively and rotatably supporting the flanges on opposite sides of the reel with duplicate frames and frame hubs secured to opposite sides in the container. *Brochure; Blunt, [0093]-[0097], [0082];* And both *Brochure* and *Blunt* intend to provide environmentally friendly options. *Brochure; Blunt, [0019], [0107].*

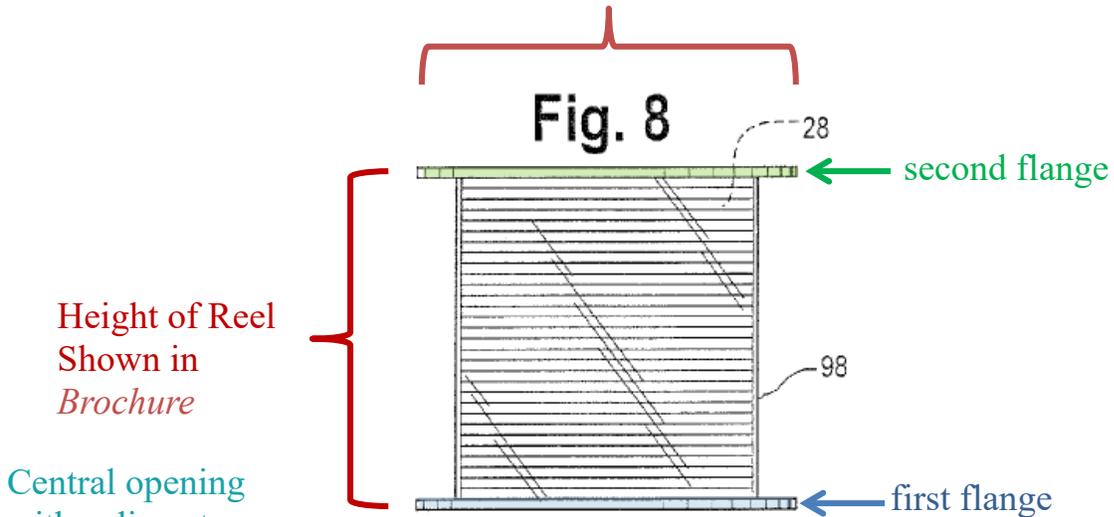
67. Given the similar functions, structures, and methods of installation of both reels, a person of ordinary skill in the art would have known how to and been motivated to (1) modify *Brochure*'s reel with *Blunt*'s hub construction, such as the two-component construction disclosed by *Blunt (Blunt, [0096])*; or to (2)

appropriately size *Blunt*'s reel to substitute the reel of *Brochure*. A person of ordinary skill in the art at the time of the alleged invention also would have known how to and been motivated to modify *Brochure*'s installation method with *Blunt*'s methods for installing the modified or substituted reel. Indeed, a person of ordinary skill in the art at the time of the alleged invention would have understood how to install *Blunt*'s reel in *Brochure* by suitably sizing *Blunt*'s reel based on *Blunt*'s teaching of the relative sizing of the reel and the selected container. *Blunt*, [0077], FIG. 2. And a person of ordinary skill in the art at the time of the alleged invention would have understood that such modification would allow *Brochure* to obtain the benefits of *Blunt*'s reusable reel structure and its installation methods described above.

68. A person of ordinary skill in the art at the time of the alleged invention would appreciate that such modification would achieve the following reel structure:

Assembled View

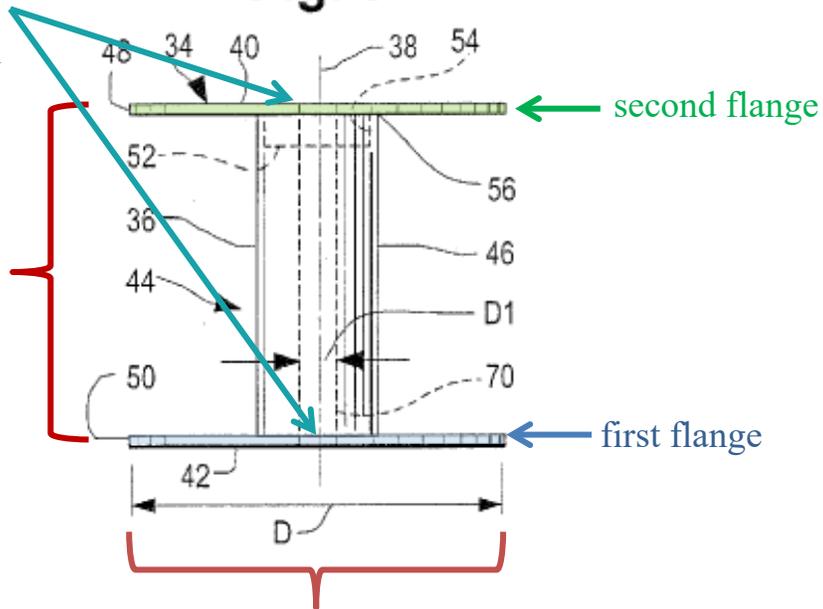
Width of Reel Shown in *Brochure*



Height of Reel Shown in *Brochure*

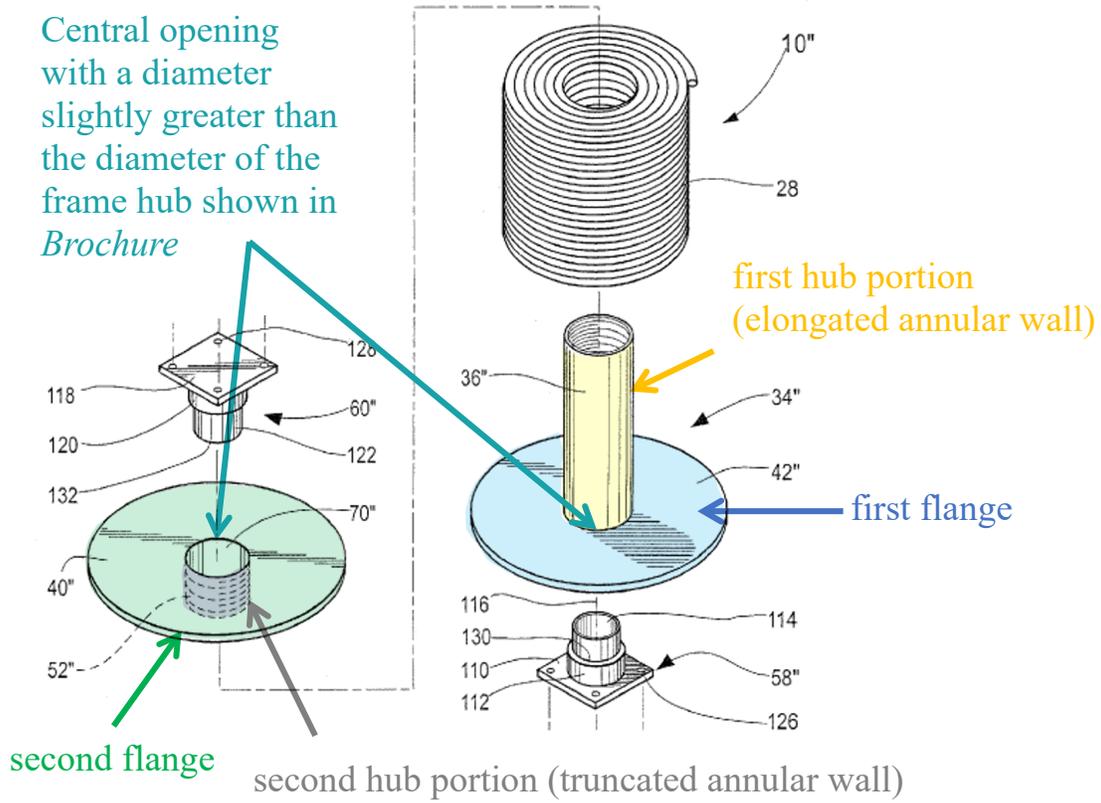
Central opening with a diameter slightly greater than the diameter of the frame hub shown in *Brochure*

Fig. 3



Width of Reel Shown in *Brochure*

Dissembled View



B. Independent Claim 9

- 1. A method of installing a cable reel in a bag, comprising the steps of:**



Brochure.

69. *Brochure* discloses a method of installing a cable reel in a bag, as shown above, and provides the following instructions on how to install the cable reel in the *Tote* bag:

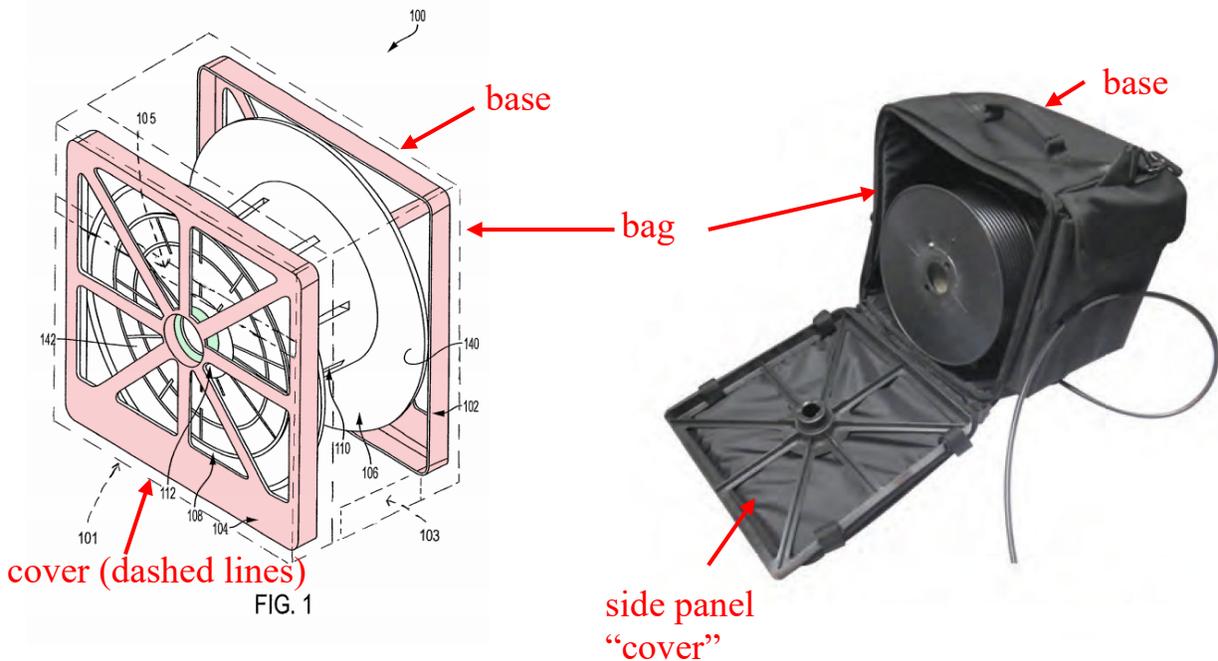
How to use:

1. Insert the cable reel into the bag so that the flange center hole fits over the frame hub and so that the cable pays straight across the bottom of the reel and out the opening of the bag.
2. Close the side panel and ensure that the frame hub is positioned in the cable reel flange opening.
3. Zip the side panel so it is secured.
4. When cable is not in use, place the end of the cable in the elastic holders on the front of the Perfect Tote™.

Id.

2. “securing a first support frame to a base of a bag;”

70. *Brochure*, alone or in combination with *Blunt*, renders this limitation obvious.



The '957 Patent

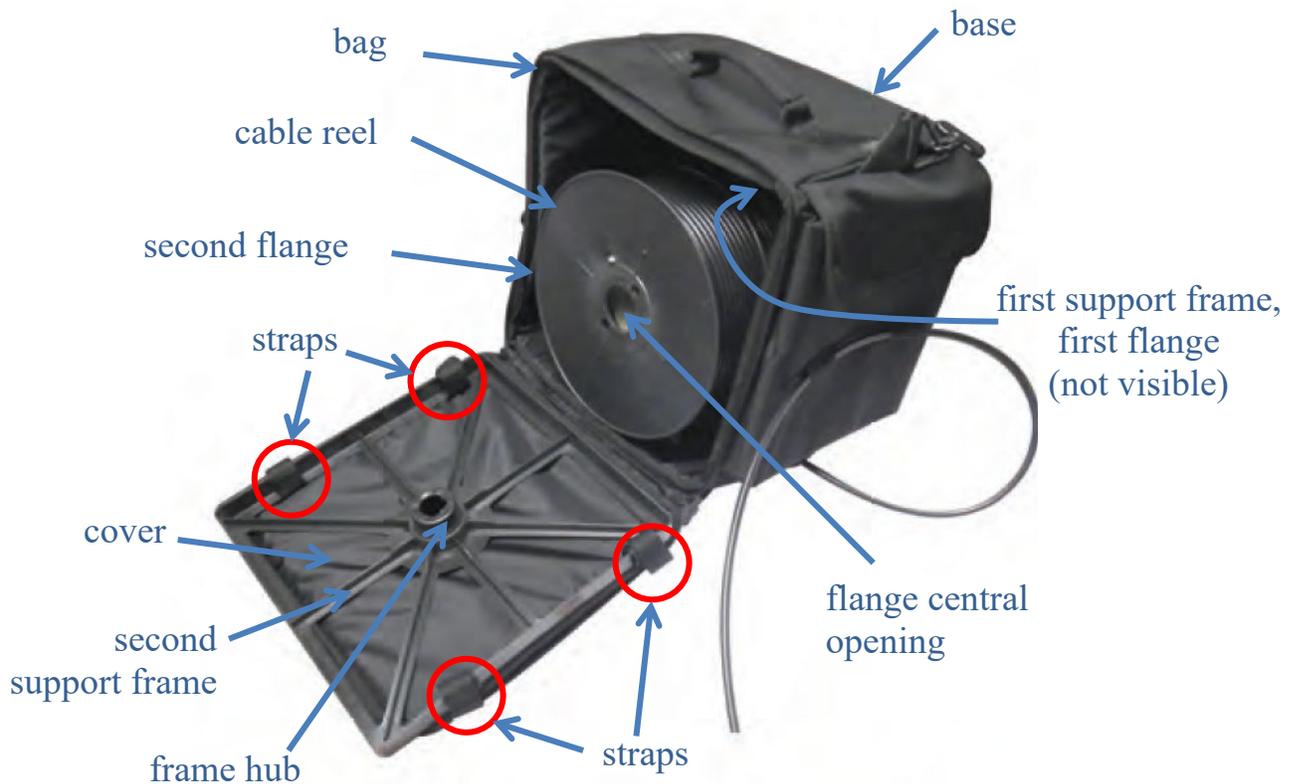
Brochure

Ex. 1001, FIG. 1 (annotated); *Brochure* (annotated).

71. As shown above, the '957 patent discloses a cover of a bag 101 that provides access to the bag and a base of the bag opposite the cover. *See* Ex. 1001, 3:32-36. Likewise, *Brochure* discloses a cover of a bag that provides access to the bag and a base of the bag opposite the cover. *Brochure*.

72. As shown below, *Brochure* teaches the use of a frame hub, which gets “positioned in the cable reel flange opening” and is part of a support frame that is

secured to the side panel (“cover”) via four straps. *Brochure* (Step 2); see above § VII.A.



Brochure (annotated).

73. A person of ordinary skill in the art would have recognized that the *Tote* bag would have included, or it would have been obvious to include, a duplicate support frame secured via straps to the base side of the bag in the same manner as the support frame is secured via straps to the opposite cover side of the bag, as shown above and discussed in § VII.A and below:

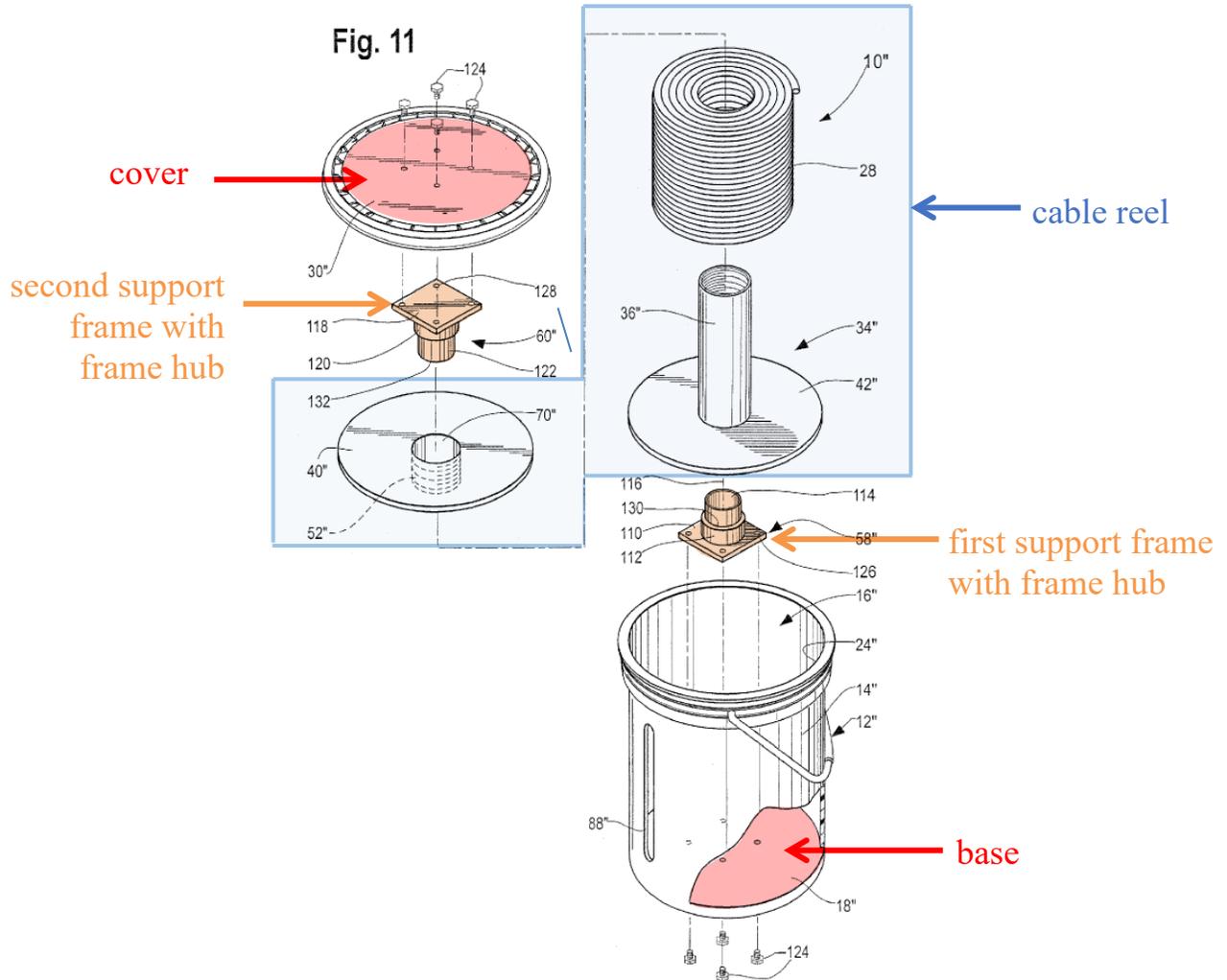
- First, as explained above, since *Brochure* discloses that Step 1 in its installation method is to “[i]nsert the cable reel into the bag **so that the flange center hole fits over the frame hub,**” a person of ordinary skill in the art would have readily recognized that if the “flange center hole [is to] fit[] over the frame hub” when it is inserted into the bag, a frame hub necessarily must have been previously positioned on the inside surface of the base of the bag. *See above* § VII.A; *Brochure* (emphasis added).
- Second, as also explained above, duplicate support frames on both sides of cable reels were notoriously old and well known at the time of the alleged invention because of their simplicity and cost savings resulting from having to manufacture only one part. *See above* § VI. For example, *Blunt* (*Blunt*, also assigned to PPC—manufacturer of the *Tote* bag) discloses the use of such a duplicate frame structure (guide components 58", 60") on the inside surfaces of both the cover (lid 30") and base (bottom wall 18") of a cable reel container (container 12") to rotatably support a cable reel (cable reel 34") in the container. *Blunt*, [0093], [0095], [0097], [0082], FIG. 11. Likewise, *Johanson* (Ex. 1013) discloses the use of a pair of duplicate end plates 14 (duplicate support frames) that are positioned in a mirror-symmetric

manner on opposite sides of its spool container (box 12) to support the spool 16 at opposite ends. *Johanson*, 2:60-65, 3:5-10. And *Wilkinson* (Ex. 1014) discloses the use of a pair of identical end plates 16 (duplicate support frames) secured to opposite sides of its spool container (box 12) to support the spool 40 at opposite ends. *Wilkinson*, 2:14-19, 2:42, 3:54-57. Likewise, *Galvano* (Ex. 1011) discloses the use of identical left and right caddies 200, 204 (duplicate support frames) that are positioned on opposite sides of its spool container (carton 10) to support its cable reel 202 at opposite ends. *Galvano*, 3:17-20, 3:58-67, 4:1-30. With this background knowledge, a person of ordinary skill in the art at the time of the alleged invention would have understood that the *Tote* bag along with its installation instructions as disclosed in *Brochure* would have a duplicate support frame secured to the base of the bag to support a cable reel for cable payout. A person of ordinary skill in the art also would have understood that the *Tote* bag would not work without a duplicate support frame secured to the base of the bag because the flange of the cable reel would have to be rotatably supported in a stable and balanced way for the bag to function for cable payout. *Id.*; *see above* § VII.A.

- Third, a person of ordinary skill in the art would have recognized that, due to its flexibility, if the base side of the *Tote* bag does not have a support frame similar to that on its cover, the bag will not retain the shape illustrated in the figure above. *See above* § VII.A.
- Fourth, a person of ordinary skill in the art would have recognized that, if the base side of the *Tote* bag does not have a support frame that is the same or similar to that on its cover, when the bag is lifted using its handle (visible in the figure above), the side of the bag near the base would move inwards and collapse on the side of the cable reel (in the bag) and hinder its rotation (when the end of the cable outside the bag is pulled for payout of the cable). *See above* § VII.A.
- And fifth, *Brochure* teaches securing a support frame to the bag cover to aid in positioning of the frame because the straps would keep the frame in the correct position as the cover is closed. Similarly securing the interior support frame mentioned in the instructions would have the same result—it would allow the interior frame to be kept in the correct position while the reel is inserted into the bag and rotates for cable payout. *See above* § VII.A.

74. Additionally, a person of ordinary skill in the art would have readily recognized that *Blunt* (also assigned to PPC—manufacturer of the *Tote* bag)

teaches the use of such a duplicate frame structure secured to both the cover and base sides of a cable reel container to rotatably support a cable reel in the container.



Blunt, FIG. 11 (annotated).

75. As shown above, *Blunt* discloses installing cable reel 34" in a container 12" using a pair of guide components 58", 60" that have "the same or a similar construction." *Id.*, [0093], [0095]. *Blunt* also discloses that both guide

components 58", 60" are secured to the cover and base sides of container 12" "using [four] similar fasteners 124." *Id.*, [0095]. Guide component 58" is secured to the bottom wall 18" of container 12" using four fasteners 124, and guide component 60" is secured to the inside surface of the lid 30" of container 12" using four fasteners 124. *Id.*, [0095]. Reel 34" is then disposed in container 12" such that the shafts 114, 122 of guide components 58", 60" project into bore 70" of reel 34" through opposite ends to rotatably capture the reel 34" between guide components 58", 60". *Id.*, [0097].

76. A person of ordinary skill in the art would have recognized that *Blunt's* guide components 58", 60" are similar to and serve the same function as the frame hubs on the cover and base of the *Tote* bag, which enter the cable reel central opening from opposite ends and support both ends of the cable reel and their respective support frames. Accordingly, based on the teachings of *Blunt*, it would have been obvious for a person of ordinary skill in the art to secure the frame hub in Step 1 of *Brochure* to the base of the *Tote* bag in the same manner as the frame hub in Step 2 is secured to the cover of the *Tote* bag to hold the cable reel for cable payout. *Id.* For example, it would have been obvious for a person of ordinary skill in the art to secure the frame hub to the base of the *Tote* bag by securing a support frame, of which the frame hub is part of, to the base of the bag

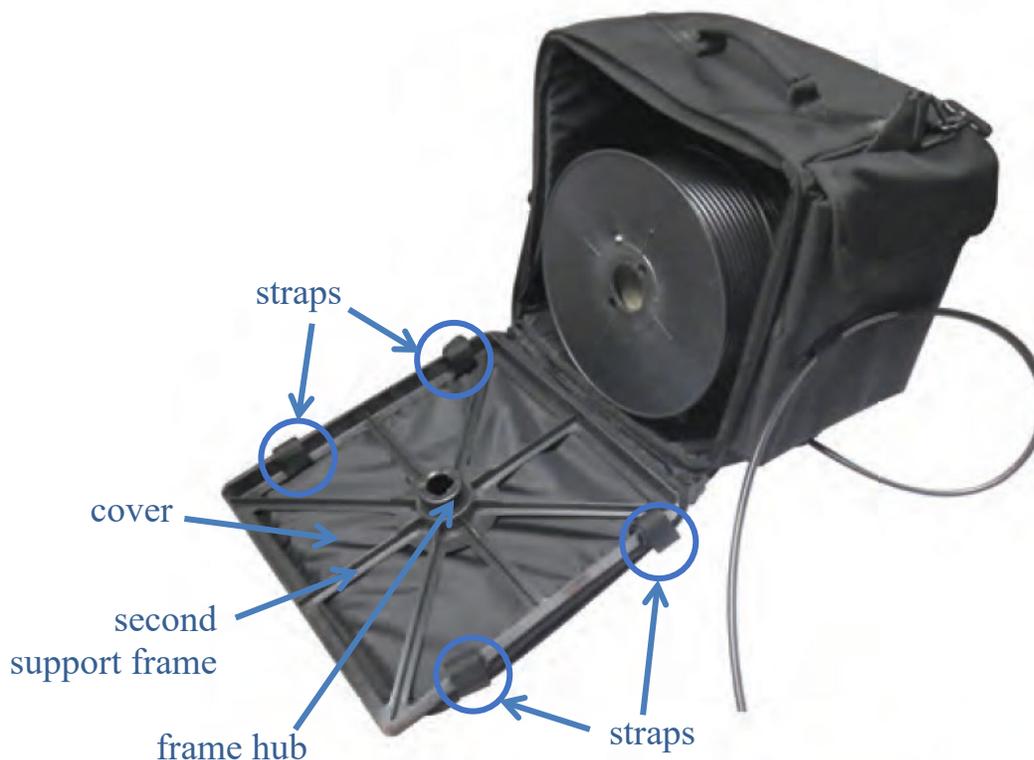
via straps as securing the support frame with the frame hub to the bag cover via straps. *Id.*

77. Securing the frame hub in Step 1 of *Brochure* to the base of the *Tote* bag, based on the teachings of *Blunt*, would merely have been the use of a known and duplicative technique to improve similar devices and methods in the same way. As discussed above in Section IX.A, both *Brochure* and *Blunt* disclose containers to transport a cable reel to payout cables at different locations; both *Blunt's* and *Brochure's* cable reels have a similar structure; and both *Brochure* and *Blunt* disclose captively and rotatably supporting the flanges on opposite sides of the reel with duplicate frame hubs. In light of the same function and similar structures of both containers and both cable reels, a person of ordinary skill in the art would have readily recognized that securing the cable reel in the *Tote* bag in a similar manner as in *Blunt* would merely have been the use of the same known technique to improve similar devices and methods in the same way to obtain predictable results of a lighter, easier, and environmentally friendly cable payout device and corresponding installation method.

78. Accordingly, *Brochure*, alone or in combination with *Blunt*, renders the step of securing a first support frame to a base of a bag obvious.

3. “securing a second support frame to a cover of the bag;”

79. *Brochure* discloses the step of securing a second support frame to a cover of a bag as shown below and as described in *Brochure*’s installation instructions. *Brochure*.



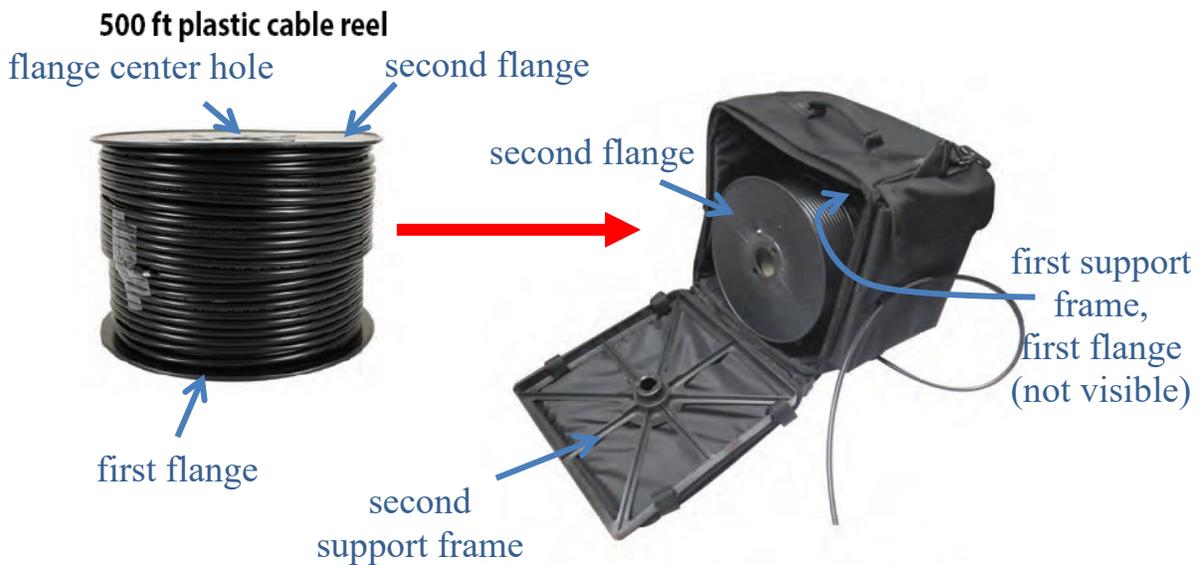
Brochure (annotated).

80. For instance, *Brochure*’s installation instructions disclose that, after Step 1 of inserting the “cable reel into the bag so that the flange center hole fits over the frame hub,” Step 2 is to “[c]lose the side panel [to] ensure that the frame hub is positioned in the cable reel flange opening.” *Brochure*. And from at least the

above figure, a person of ordinary skill in the art would have readily recognized that *Brochure* teaches that the frame hub, which gets positioned in the cable reel flange opening when the side panel is closed, is part of a support frame that is secured to the bag cover using straps. This support frame corresponds to the claimed “second support frame.” Accordingly, *Brochure* discloses securing a second support frame to a cover of a bag. *Id.*

4. “placing a first flange on the first support frame, wherein the first flange includes a first hub portion;”

81. *Brochure*, alone or in combination with *Blunt*, renders this limitation obvious.

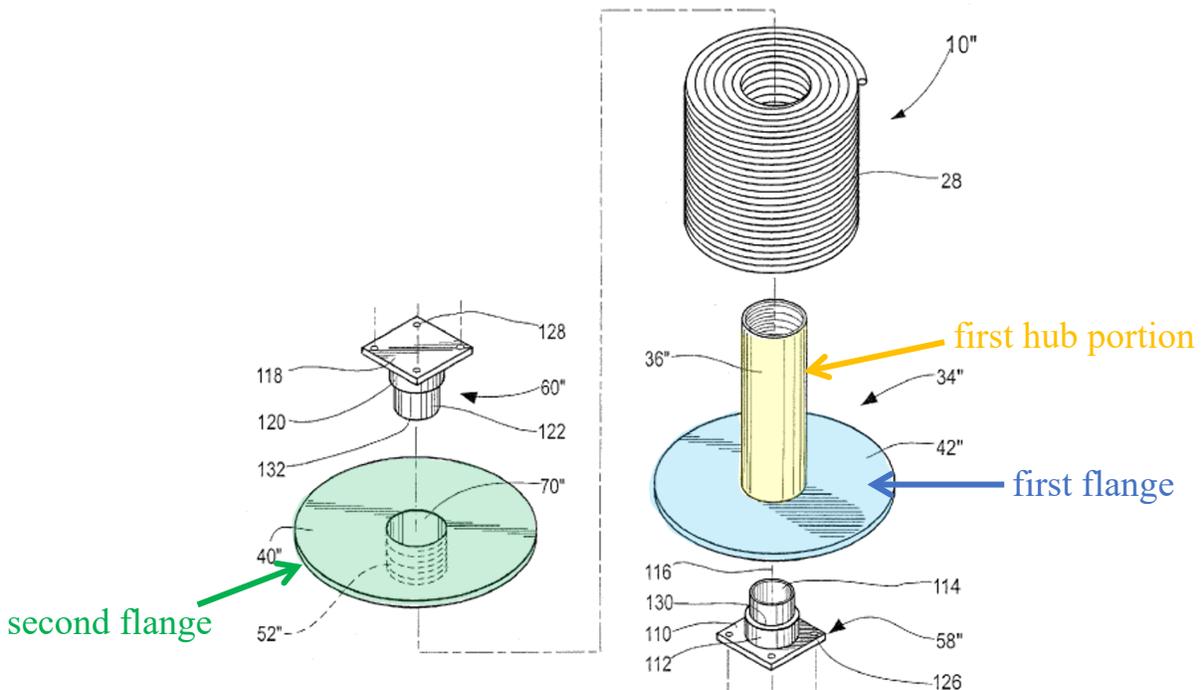


Brochure (annotated).

82. *Brochure* alone discloses “placing a first flange on the first support frame.” As shown above, *Brochure* discloses a cable reel that includes first and

second flanges on both sides of the reel. *Brochure*. *Brochure*'s installation instructions also disclose that Step 1 is to “[i]nsert the cable reel into the bag so that the flange center hole fits over the frame hub.” *Brochure*. In other words, *Brochure* discloses a cable reel that is inserted into the bag such that a flange center hole of the first flange (see annotations in figure above) is designed to fit over a frame hub (not visible in the figure above), which is part of a first support frame secured to the base of the bag. *See above* § IX.B.2. A person of ordinary skill in the art would have readily recognized that *Brochure* teaches that the flange (“first flange”), on which the flange center hole is provided, is placed on the frame hub of the first support frame in the same manner disclosed in the '957 patent shown below:

84. *Brochure* in combination with *Blunt* also discloses that “the first flange includes a first hub portion.” As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:



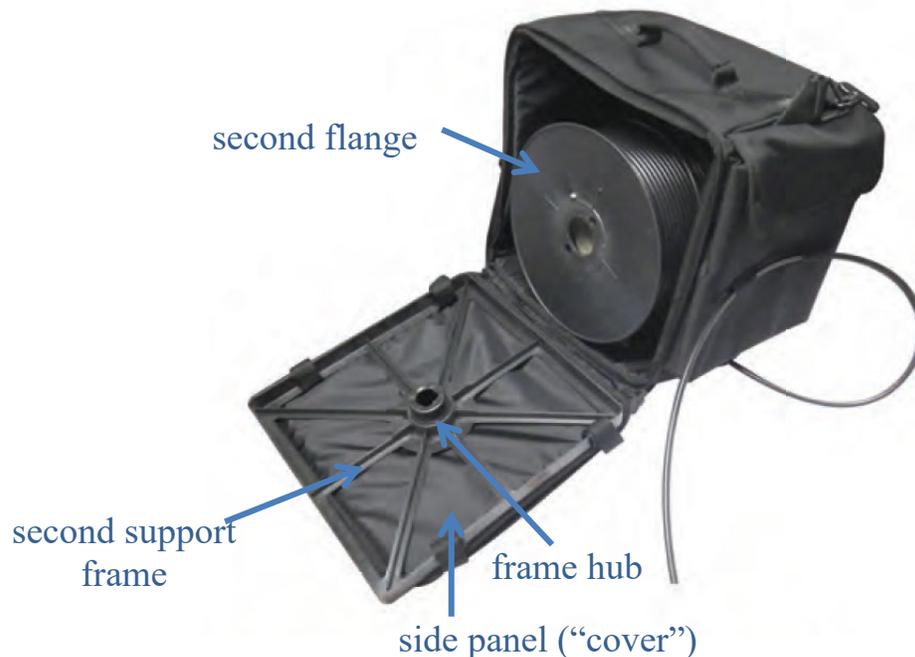
See above § IX.A; *Blunt*, FIG. 11 (annotated).

85. As shown above, flange 42" of *Blunt*'s reel 34" corresponds to the claimed “first flange” and core 36" corresponds to the claimed “first hub portion.” *Blunt* discloses that “core 36 and flange 42 are formed together as an inseparable unit.” *Blunt*, [0073]. *Blunt* also discloses that “reel 34" includes a two-component construction, where (1) the first component includes a combined flange 42" (“first flange”) and core 36", and (2) the second component includes a separate flange 40"

(“second flange”) with an associated stub component 52”. *Id.*, [0096]. Since the combined flange 42” and core 36” are formed together as an inseparable unit and/or make up the first component of the two-component reel 34”, *Blunt*’s flange 42” (“first flange”) includes the core 36” (“first hub portion”).

5. **“placing a second flange on the second support frame, wherein the second flange includes a second hub portion, wherein either the first hub portion or the second hub portion includes an elongated annular wall having a receiving area and the other of the first hub portion and the second hub portion includes a truncated annular wall receivable in the receiving area; and”**

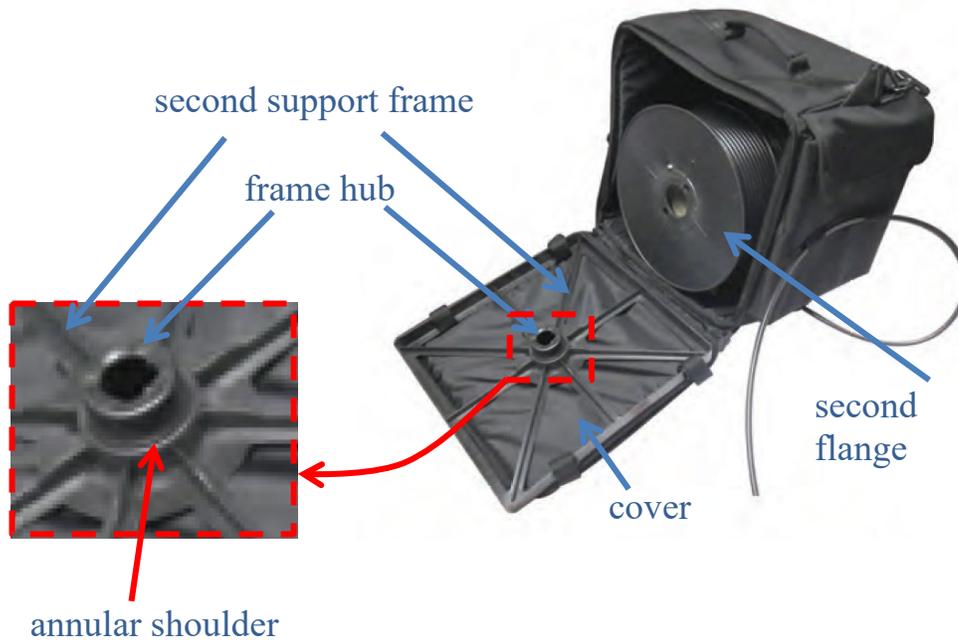
86. *Brochure* in combination with *Blunt* renders this limitation obvious.



Brochure (annotated).

87. As shown above, *Brochure*'s cable reel includes a second flange. *Brochure*. And as shown above and stated in *Brochure*'s installation instructions, *Brochure* discloses that the side panel ("cover") is closed to "ensure that the frame hub is positioned in the cable reel flange opening" after the cable reel has been inserted into the bag. *Brochure*. The support frame secured to the side panel ("cover") that the frame hub is a part of corresponds to the "second support frame." Based at least on the configuration of the support frame, frame hub, and the cable reel in *Brochure* shown above, a person of ordinary skill in the art would have readily recognized that, when the side panel is closed and the "frame hub is positioned in the cable reel flange opening," at least a portion of the "second support frame" would be placed on the second flange of the cable reel.

88. Indeed, *Brochure* discloses the step of "placing a second flange on the second support frame" in the same manner as disclosed in the '957 patent. For instance, the '957 patent expressly states that "the middle flange support 124 of the frame secured to the cover of the bag [i.e., the second support frame 104] fits inside of the opening 144 of the other flange [the second flange 108] **when the bag is closed.**" Ex. 1001, 5:34-37 (emphasis added). In the same manner, *Brochure* discloses that when the side panel of the bag is closed, the frame hub of the second support frame, which is attached to the side panel, fits into the opening of the second flange and contacts the flange. *Brochure*.

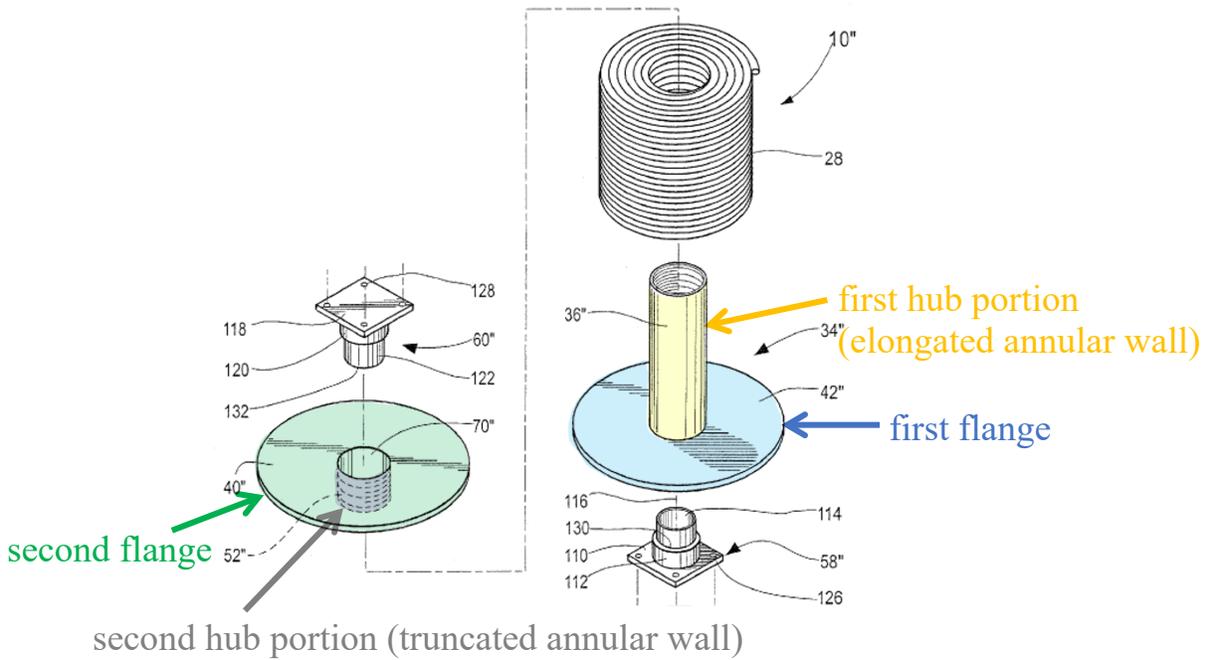


Brochure (annotated).

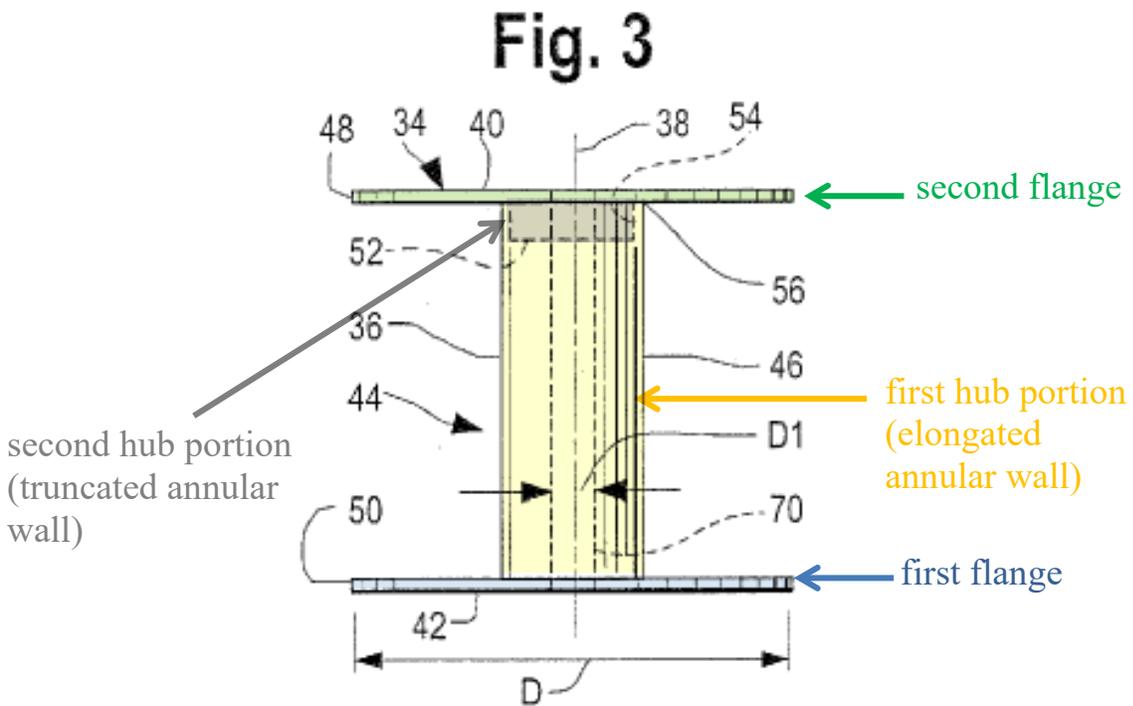
89. Moreover, a person of ordinary skill in the art would have readily recognized that, in the *Tote* bag, at least a portion of the frame hub or the second support frame will necessarily contact the cable reel flange when the side panel (“cover”) is closed and when the frame hub fits into the flange opening. A person of ordinary skill in the art would have recognized that, in the *Tote* bag as modified by *Blunt*, the cable reel is captively and rotatably located between two support frames—the first support frame with a frame hub on the base side and the second support frame with a frame hub on the cover side. Therefore, when the cable reel rotates on the two frame hubs (when the cable is pulled from outside the bag for payout), at least a portion of the second flange of the cable reel will contact the second support frame, such as its frame hub.

90. In addition, in *Blunt*, “reel 34” is ... captively located between facing, annular shoulders 130, 132 defined on the guide components 58", 60".” *Blunt*, [0097]. Based on the teachings of *Blunt*, a person of ordinary skill in the art would have known that the annular shoulder of the frame hub would contact the cable reel flange in the periphery of the flange opening to captively and rotatably locate the cable reel between the opposing frame hubs and prevent rattling. In other words, based on at least the teachings of *Blunt* and *Brochure*, a person of ordinary skill in the art would have readily recognized that supporting the cable reel between the opposing support frames necessarily would have rotatably secured the cable reel in the *Tote* bag such that the flanges on either side of the cable reel contact their respective support frames. *See Blunt*, [0097].

91. Furthermore, *Brochure* in combination with *Blunt* discloses the “wherein” clauses recited in this limitation. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:



See above § IX.A; *Blunt*, FIG. 11 (annotated).



See above §§ VII.B, IX.A; *Blunt*, FIG. 3 (annotated).

92. As shown above, in this reel structure, flange 40" corresponds to the claimed "second flange" and stub component 52" corresponds to the claimed "second hub portion." *Blunt* also discloses that reel 34" includes a two-component construction, where (1) the first component includes a combined flange 42" ("first flange") and core 36", and (2) the second component includes a separate flange 40" ("second flange") with an associated stub component 52". *Blunt*, [0096]. Since the combined flange 40" and stub component 52" make up the second component of the two-component reel 34", a person of ordinary skill in the art would readily understand that (1) *Blunt*'s flange 40" ("second flange") includes the stub component 52" ("second hub portion"); and (2) when the side panel of the *Tote* bag is closed, the "second support frame" secured to the side panel of the bag necessarily will be placed on flange 40" of this reel structure.

93. In addition, as shown above, in this reel structure, *Blunt*'s core 36" ("first hub portion") includes an "elongated annular wall" that extends around bore 70", and *Blunt*'s stub component 52" ("second hub portion") includes a truncated annular wall that extends around bore 70".

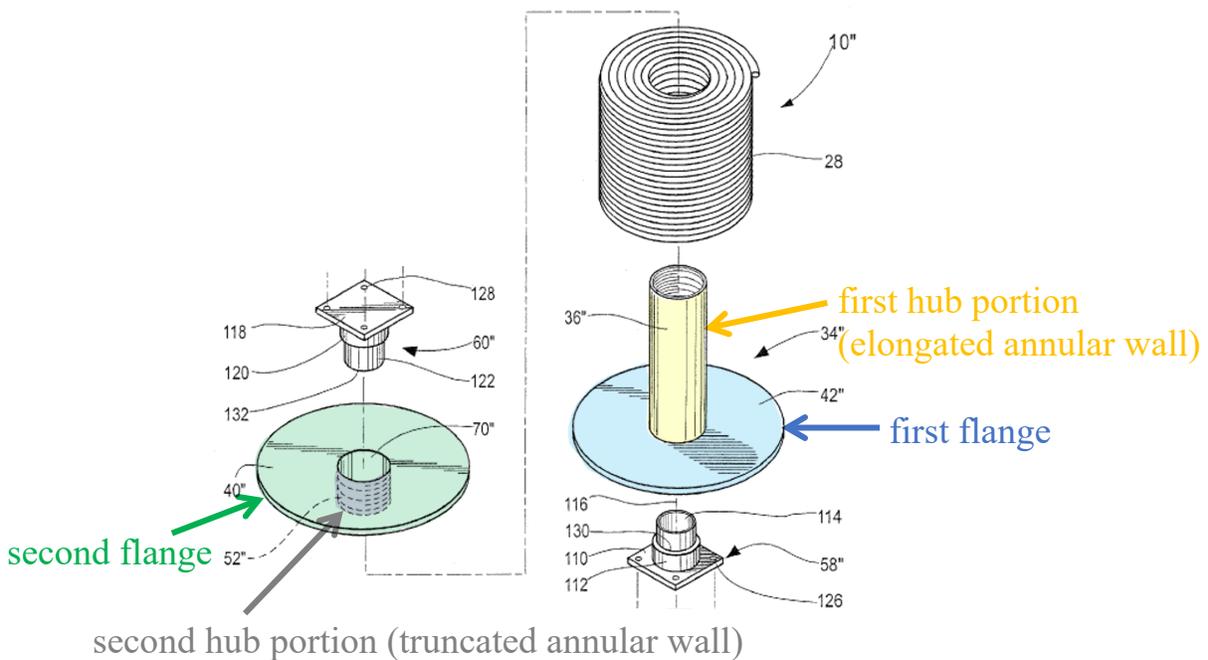
94. And with respect to Figure 3 shown above, *Blunt* also discloses that flange 40" ("second flange") includes "a stub component 52 that can be *nested* in a complementary receptacle 54 on the core 36. The stub component 52 and core 36 may be *releasably maintained* together through frictional engagement" *Blunt*,

[0073] (emphases added). A person of ordinary skill in the art would have understood that stub component 52" ("truncated annular wall") is receivable in a complementary receptacle 54 ("receiving area") of core 36" ("elongated annular wall").

6. "placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall."

95. *Brochure* in combination with *Blunt* renders this limitation obvious.

96. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:



See above § IX.A; *Blunt*, FIG. 11 (annotated).

97. As discussed above and below, *Blunt* teaches that this structure would be assembled by “placing the truncated annular wall within the receiving area of the elongated annular wall.” *See above* § IX.B.5.

98. With reference to Figure 3 below, *Blunt* discloses that flange 40 is provided with a stub component 52 that can be *nested* in a complementary receptacle 54 on the core 36. The stub component 52 and core 36 may be *releasably maintained* together through frictional engagement, or otherwise as by the use of cooperating threads. With this arrangement, the flange 40 can be selectively separated from the core 36 to allow the core end 56 to be directed through a pre-coiled supply of cable 28.

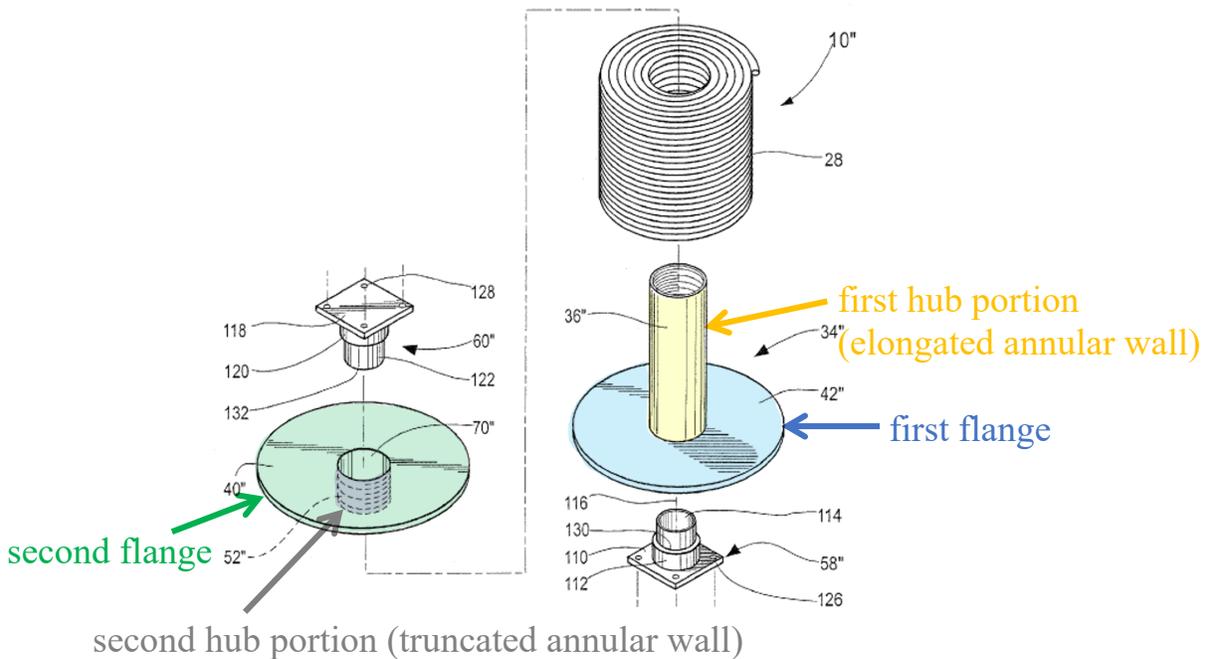
Blunt, [0073] (emphases added).

99. A person of ordinary skill in the art would have understood that *Blunt* discloses that reel 34" would be assembled by directing a supply of cable 28 through core 36" (“elongated annular wall”) of flange 42" and then inserting stub component 52" (“truncated annular wall”) of flange 40" within the receiving area of core 36" (“elongated annular wall”). The combination of *Brochure* and *Blunt* thus renders obvious the step of “placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall.”

C. Claim 10 - “The method of claim 9, further comprising the step of placing a coil of cable on the elongated annular wall.”

100. *Brochure* in combination with *Blunt* renders obvious claim 10.

101. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:

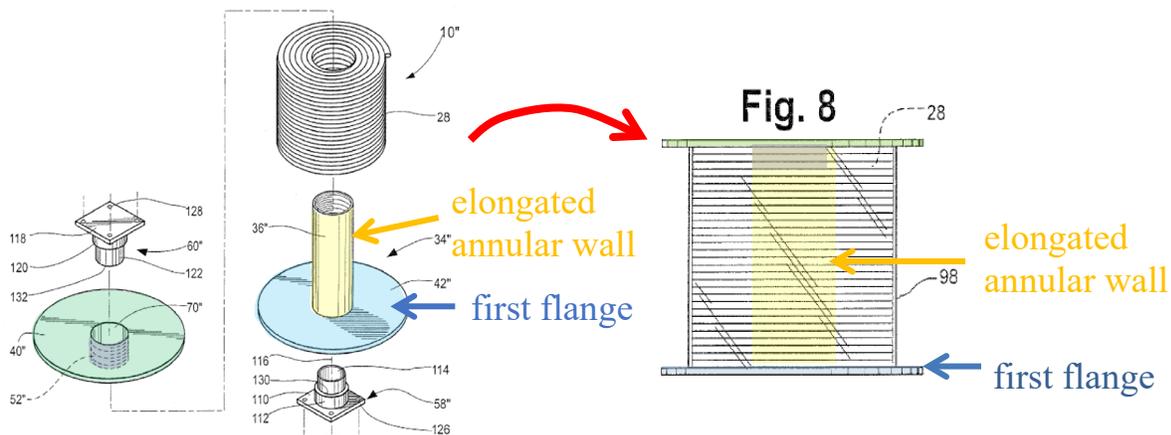


See above § IX.A; *Blunt*, FIG. 11 (annotated).

102. As discussed above and below, in this reel structure, *Blunt*'s core 36" (“first hub portion”) includes an “elongated annular wall” that extends around bore 70", and *Blunt*'s stub component 52" (“second hub portion”) includes a truncated annular wall that extends around bore 70".

103. *Blunt* discloses that “cable 28 can be pre-coiled and slid axially over the core 36 or wrapped directly against the core 36.” *Blunt*, [0072]. *Blunt* also

discloses that “the flange 40 can be selectively separated from the core 36 to allow the core end 56 to be *directed through a pre-coiled supply of cable 28.*” *Id.* [0073] (emphasis added). Thus, as shown below, a person of ordinary skill in the art would have understood that *Blunt*’s pre-coiled supply of cable 28 is a coil of cable for replenishing *Blunt*’s reel 34” by being placed on the elongated annular wall of core 36”.



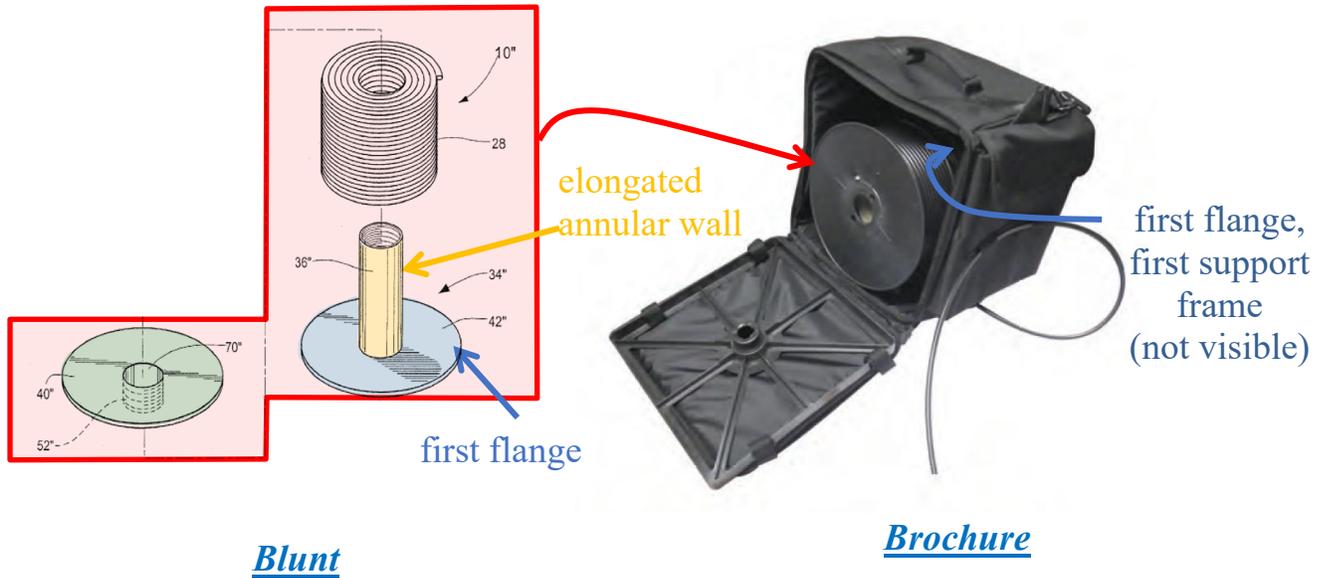
Blunt, FIG. 11 (annotated), FIG. 8 (annotated).

D. Claim 11 – “The method of claim 10, wherein the coil of cable is arranged on a side thereof in the bag.”

104. Claim 11 depends from claim 10. *Brochure* in combination with *Blunt* renders obvious claim 10.

105. As shown below, in *Brochure* combined with *Blunt*, a person of ordinary skill in the art would have understood that when flange 42” (“first flange”) is placed on the first support frame secured to the base of the bag and pre-coiled supply of cable 28 (“coil of cable”) is placed on core 36” (“elongated

annular wall”), pre-coiled supply of cable 28 is arranged on a side thereof in the bag.



E. **Claim 12** – “The method of claim 9, further comprising the step of dispensing cable of the coil of cable through a payout opening in the bag.”

106. *Brochure* in combination with *Blunt* renders obvious claim 12.

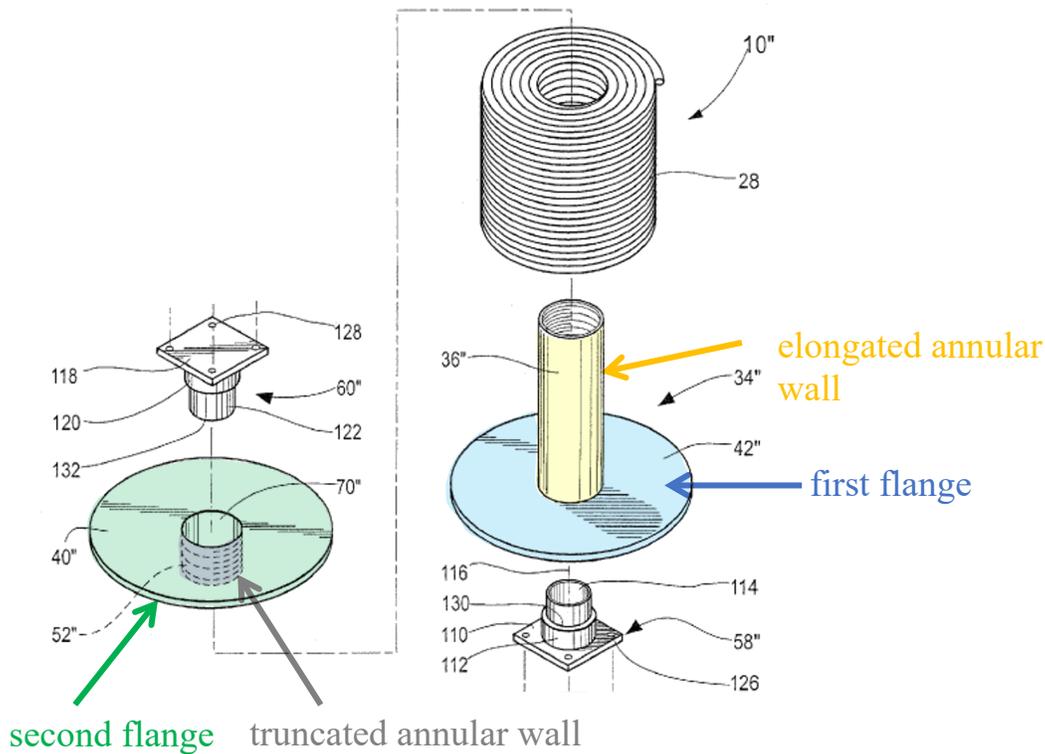


107. As shown above, *Brochure* discloses a payout opening “for smooth cable payout.” *Brochure*. *Brochure* also discloses inserting a cable reel into the bag such that “the cable pays straight across the bottom of the reel and out the opening of the bag,” and that “[w]hen cable is not in use, place the end of the cable in the elastic holders on the front.” *Id.* The peripheral wall 14 of *Blunt*’s container 12 also has an opening 88 through which the free end of the cable of the cable reel 34 supported in its container would be directed and drawn from out of the container. *Blunt*, [0082], FIGS. 2, 13. In *Brochure* combined with *Blunt*, a person of ordinary skill in the art would have understood to dispense cable of the coil of cable of *Brochure*’s reel as modified by *Blunt* (see above § IX.A) through *Brochure*’s payout opening as taught by *Brochure*.

F. Claim 13 – “The method of claim 10, further comprising the step of removing the truncated annular wall from the elongated annular wall for replacement of the coil of cable with another coil of cable.”

108. Claim 13 depends from claim 10. *Brochure* in combination with *Blunt* renders obvious claim 13.

109. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:

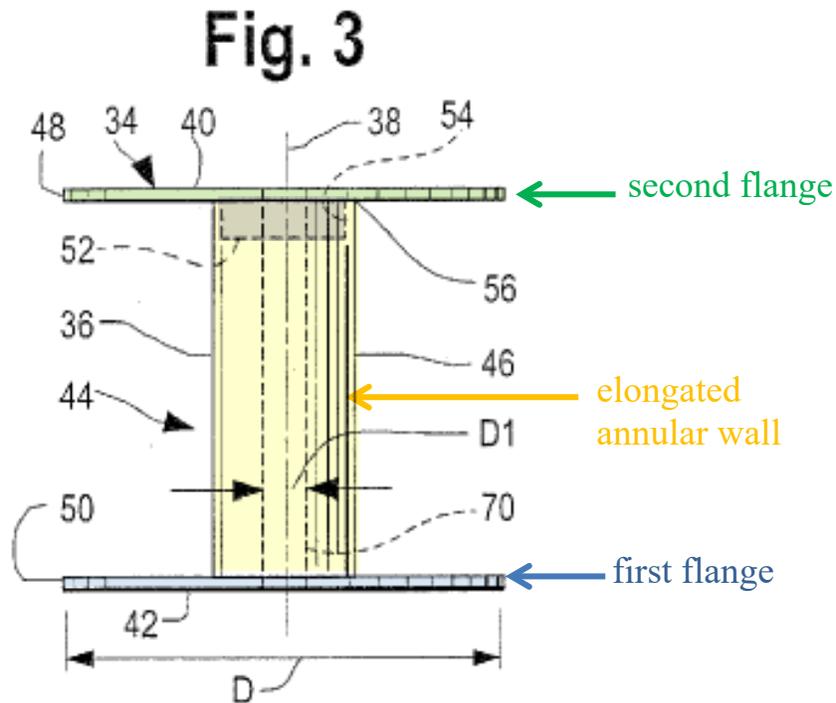


See above § IX.A; *Blunt*, FIG. 11 (annotated).

110. *Blunt* discloses a reusable reel that is releasably maintained, selectively separated, and re-used. With reference to Figure 3 below, *Blunt* discloses that

flange 40 is provided with a stub component 52 that can be nested in a complementary receptacle 54 on the core 36. The stub component 52 and core 36 may be *releasably maintained* together through frictional engagement, or otherwise as by the use of cooperating threads. With this arrangement, the flange 40 can be *selectively separated* from the core 36 to allow the core end 56 to be directed through a pre-coiled supply of cable 28.

Blunt, [0073] (emphases added).



Id., FIG. 3 (annotated).

111. *Blunt* further explains that “once the supply of cable 28 is exhausted[,] ... a new supply 26 of cable 28 [is] to be replaced, ... utilizing the reel 34 with a replenished supply of the cable 28.” *Id.* [0089] (emphasis added).

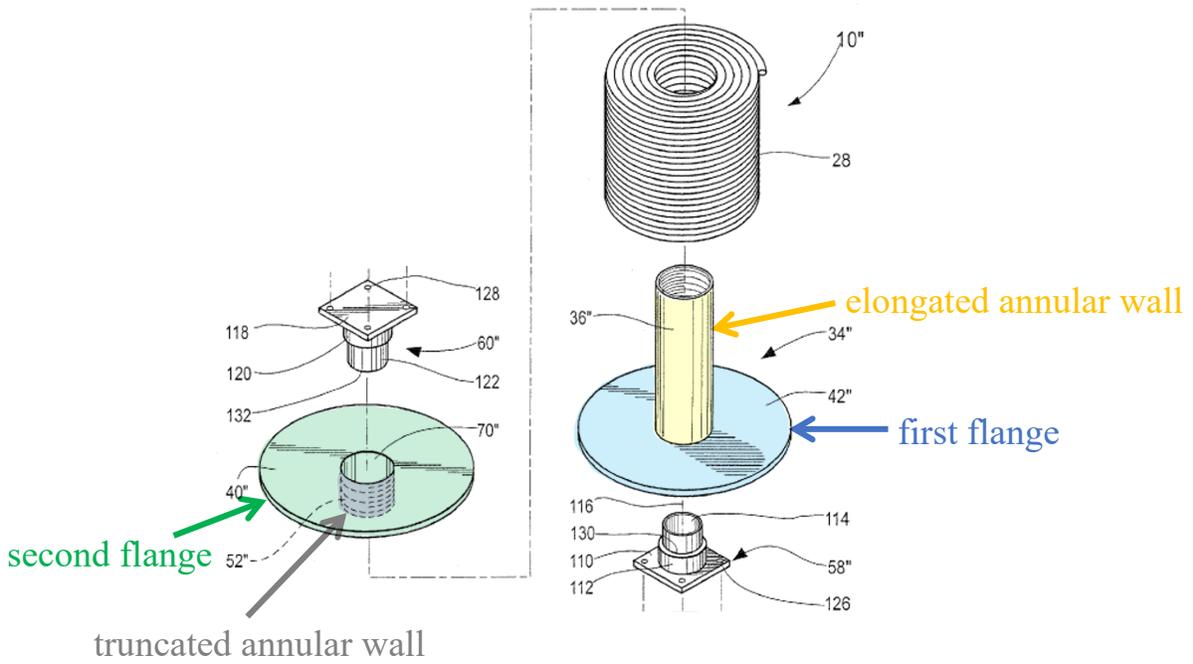
112. Therefore, because of this separable construction of reel 34”, a person of ordinary skill in the art would have understood that when the supply of cable 28 in reel 34” is exhausted, stub component 52 (“truncated annular wall”) is removed from core reel 36” (“elongated annular wall”) to allow a new supply of cable 28 (“another coil of cable”) to be loaded onto core 36” (“elongated annular wall”) by directing the core end through the cable supply.

113. As discussed above, it would have been obvious for a person of ordinary skill in the art to modify *Brochure*'s reel with *Blunt*'s reel structure or substitute *Blunt*'s reel 34" into *Brochure* so that the supply of cable would be replenished when it is exhausted, as commonly known in the art. *See above* § IX.A. Thus, a person of ordinary skill in the art would have readily recognized that *Brochure*'s reel as modified by *Blunt* would be replenished with another coil of cable by removing stub component 52 ("truncated annular wall") from core reel 36" ("elongated annular wall").

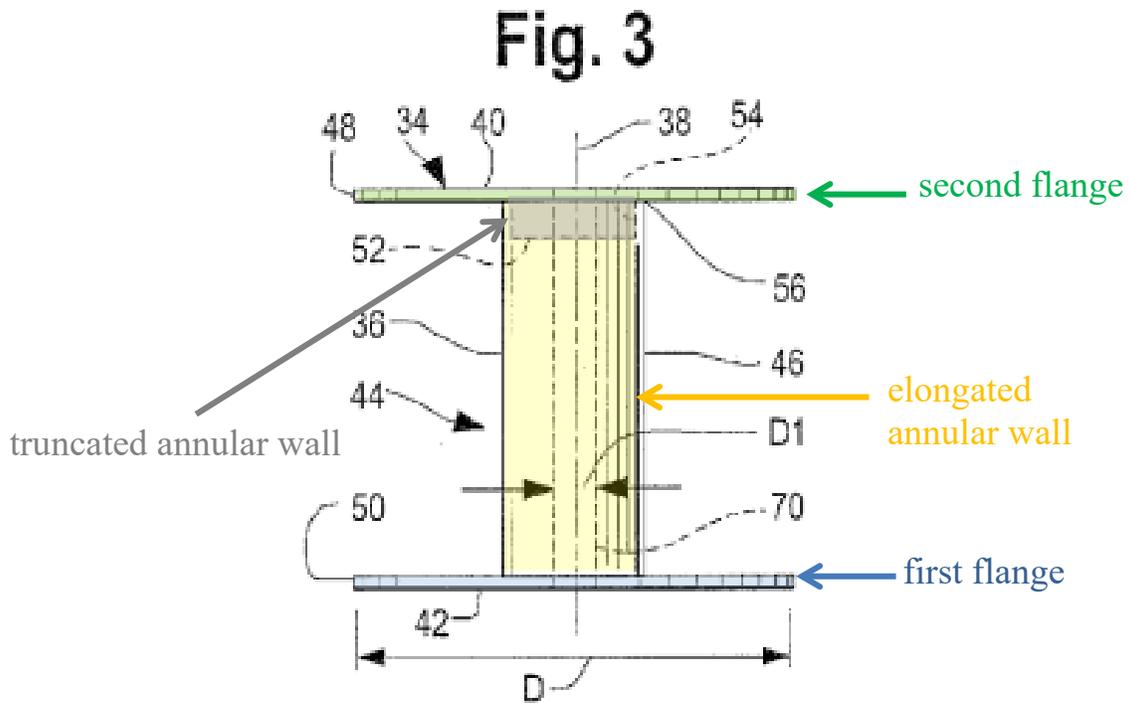
G. Claim 14 – “The method of claim 10, wherein the coil of cable lacks a support reel prior to the step of placing the coil of cable on the elongated annular wall.”

114. Claim 14 depends from claim 10. *Brochure* in combination with *Blunt* renders obvious claim 14.

115. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:



Blunt, FIG. 11 (annotated); see above § IX.A.



Blunt, FIG. 3 (annotated).

116. As shown above, *Blunt* discloses that the supply of cable 28 (“coil of cable”) lacks a support reel prior to being placed on core 36 (“elongated annular wall”). For example, *Blunt* discloses that “cable 28 can be pre-coiled and slid axially over the core 36 or wrapped directly against the core 36.” *Blunt*, [0072]. Also, with respect to Figure 3 above, *Blunt* discloses that “the flange 40 can be selectively separated from the core 36 to allow the core end 56 to be directed through a *pre-coiled* supply of cable 28.” *Id.* [0073] (emphasis added). *Blunt* further explains that “once the supply of cable 28 is exhausted[,] ... *a new supply 26 of cable 28 [is] to be replaced, ... utilizing the reel 34 with a replenished supply of the cable 28.*” *Id.* [0089] (emphasis added). Thus, a person of ordinary skill in the art would have understood that *Blunt*’s pre-coiled supply of cable 28 lacks a reel prior to replenishing *Blunt*’s reel 34" by being slid over the core 36".

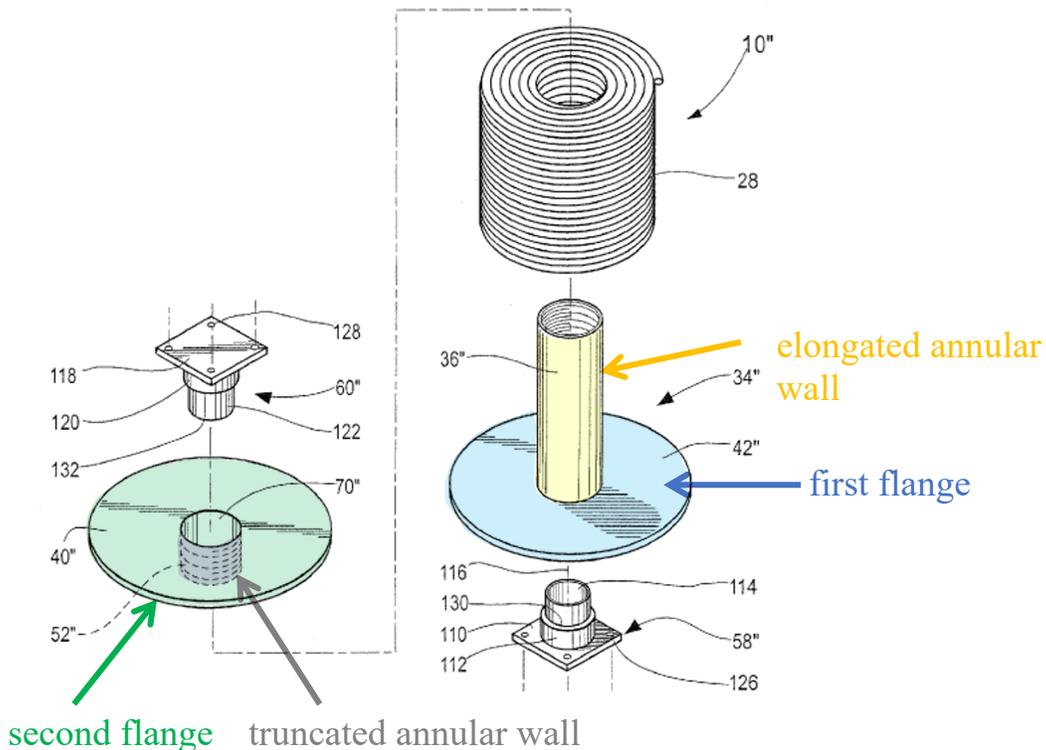
117. Furthermore, as discussed above, it was well known in the prior art that cable was commonly sold or provided without a central hub or reel, with numerous references teaching mechanisms for storing, transporting, and dispensing cable that did not come with a reel or central hub. *Blunt* (Ex. 1004); *Fontana* (Ex. 1005); *Hill* (Ex. 1040), *Lea* (Ex. 1041); *Browning* (Ex. 1042); *Huette* (Ex. 1043). Based on well-known knowledge in the art, a person of ordinary skill in the art would have been motivated to place a reel-less cable coil on an elongated annular wall of *Brochure*’s reel as modified by *Blunt* to avoid the known problems,

such as kinking or tangling, associated with directly dispensing a reel-less cable coil. Ex. 1043, 1:17-55, 3:19-32

H. Claim 15 – “The method of claim 10, wherein the step of placing the coil of cable on the elongated annular wall occurs before the step of placing the second flange to hold the coil of cable on the elongated annular wall and before the step of placing the second flange on the second support frame.”

118. Claim 15 depends from claim 10. *Brochure* in combination with *Blunt* renders obvious claim 15.

119. As discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:



See above § IX.A; *Blunt*, FIG. 11 (annotated).

120. As shown above, *Blunt* discloses that to assemble reel 34", (1) a coil of cable 28 is first slid axially over core 36" ("elongated annular wall"), and (2) then stub component 52" ("truncated annular wall") of flange 40" ("second flange") is inserted into a complementary receptacle 54 on core 36" to hold the coil of cable on core 36" between the flanges. *Blunt*, [0072]-[0073]. In other words, *Blunt* discloses that the step of placing the coil of cable on the elongated annular wall of core 36" necessarily must occur *before* the step of placing flange 40" ("second flange") to hold the coil of cable on the elongated annular wall. A person of ordinary skill in the art would have understood that *Brochure*'s reel as modified by *Blunt* would have been assembled in the same way.

121. *Brochure* discloses that the side panel, to which the second support frame is attached, is closed to "ensure that the frame hub is positioned in the cable reel flange opening" after the cable reel has been inserted into the bag. *Brochure*. A person of ordinary skill in the art would have readily understood that the side panel should be closed *after* *Brochure*'s reel as modified by *Blunt* is assembled (i.e., after placing the coil of cable on core 36" and placing flange 40") to support the reel between the frame hubs. As discussed above, the "second support frame" secured to the side panel would be placed on the second flange of the reel when the side panel is closed. *See above* § IX.B.5. Thus, in *Brochure* as modified by *Blunt*,

the step of placing the coil of cable on the elongated annular wall would occur before the step of placing flange 40" ("second flange") to hold the coil of cable on the elongated annular wall and before the step of placing the second flange on the second support frame.

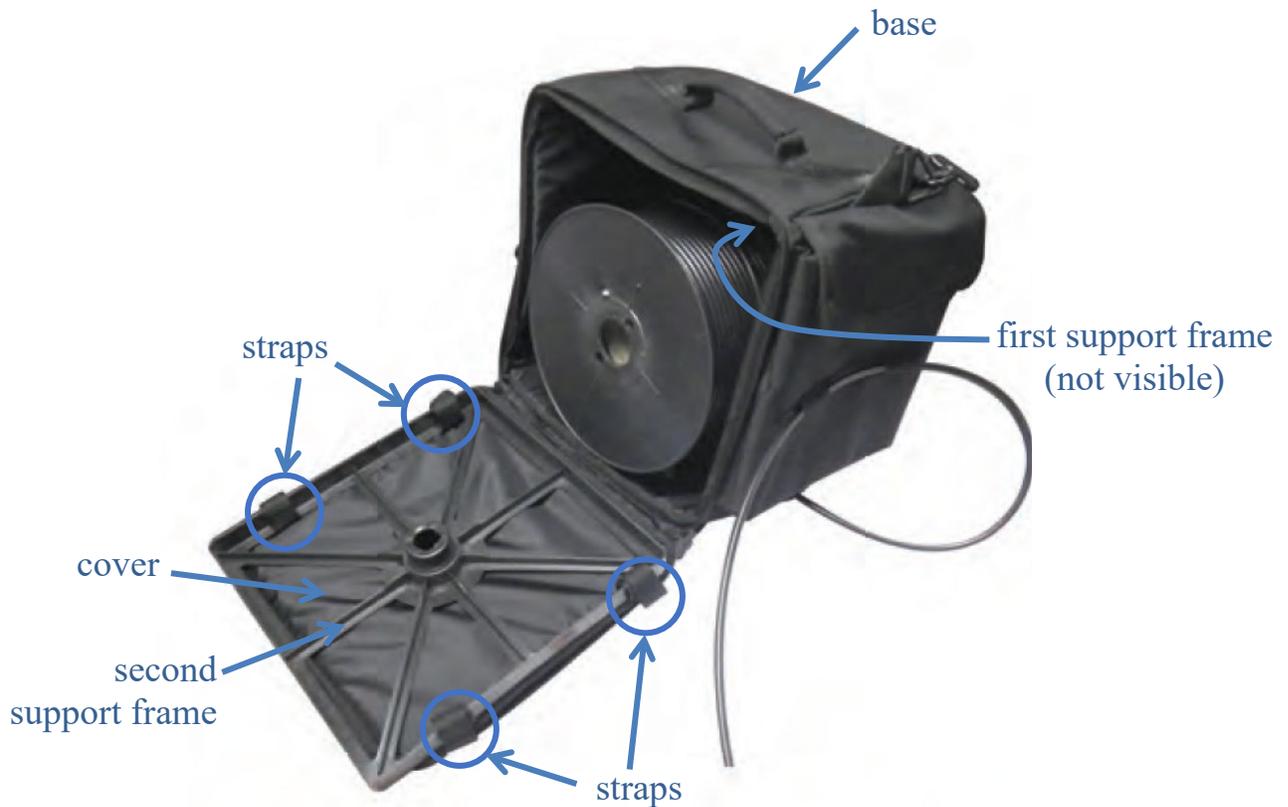
I. Claim 16 - "The method of claim 10, wherein the step of placing at least a portion of the truncated annular wall within the receiving area of the elongated annular wall occurs after placing the coil of cable on the elongated annular wall."

122. Claim 16 depends from claim 10. *Brochure* in combination with *Blunt* renders obvious claim 15.

123. As discussed above, *Blunt* discloses placing stub component 52" ("truncated annular wall") of flange 40" ("second flange") within complementary receptacle 54 ("receiving area") of core 36" ("elongated annular wall") after placing the coil of cable on core 36" ("elongated annular wall"). *See above* § IX.H; *Blunt*, [0072]-[0073].

J. Claim 17 – "The method of claim 9, further comprising the step of strapping the first support frame to the base of the bag and strapping the second support frame to the cover of the bag."

124. *Brochure*, alone or in combination with *Blunt*, discloses or renders obvious claim 17.

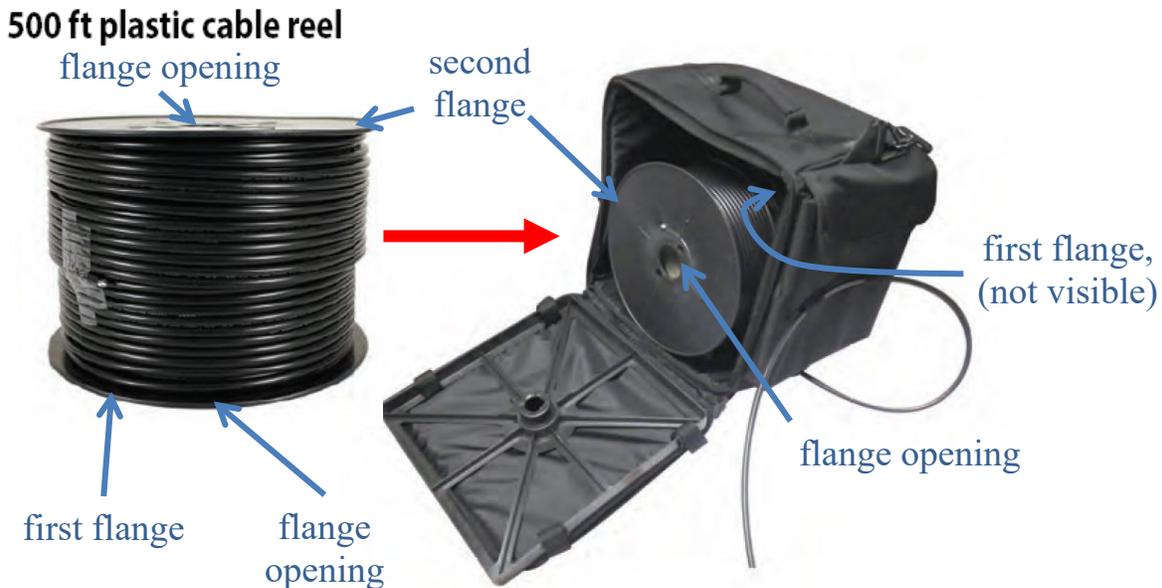


Brochure (annotated).

125. As discussed, and shown above, *Brochure* discloses a second support frame secured via straps (“strapped”) to the side panel (“cover”) of the *Tote* bag. *See above* § IX.B.3. *Brochure*, alone or in combination with *Blunt*, discloses or renders obvious a duplicate first support frame secured via straps (“strapped”) to the base side of the bag in the same manner as the second support frame is secured to the opposite cover side of the bag via straps. *See above* § IX.B.2.

K. Claim 18 - “The method of claim 9, wherein each of the first and second flanges has a central arbor opening.”

126. *Brochure*, alone or in combination with *Blunt*, discloses or renders obvious claim 18.



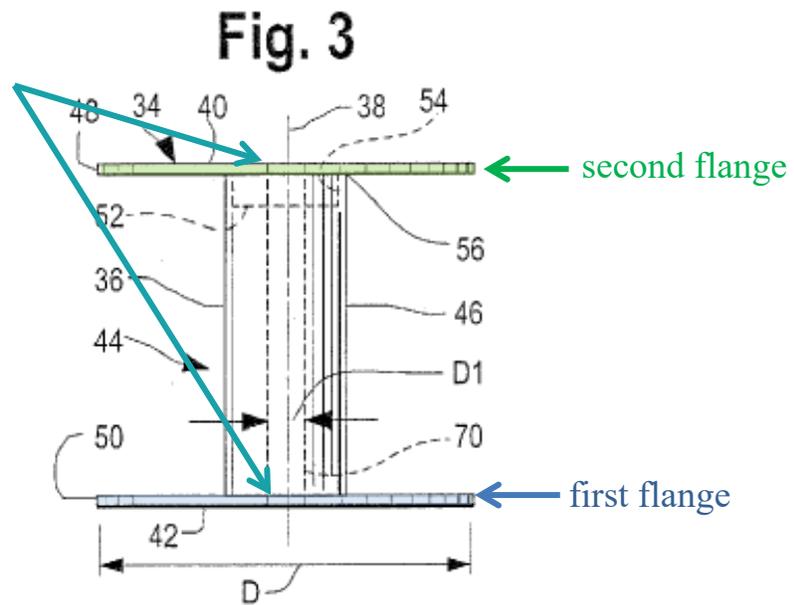
Brochure (annotated).

127. As shown above, *Brochure* discloses a cable reel that includes a first and second flange on both sides of the reel. The flange on the side of the cable reel inserted into the bag is the “first flange” and the flange on the side of the cable reel facing the cover of the bag is the “second flange.” Each of the flanges has a flange center hole or flange opening (“central arbor opening”) for fitting over a frame hub secured to the base and cover sides, respectively. *Brochure; see above*

§§ IX.B.2-IX.B.5.

128. In addition, as discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:

Central arbor opening with a diameter slightly greater than the diameter of the frame hub shown in *Brochure*



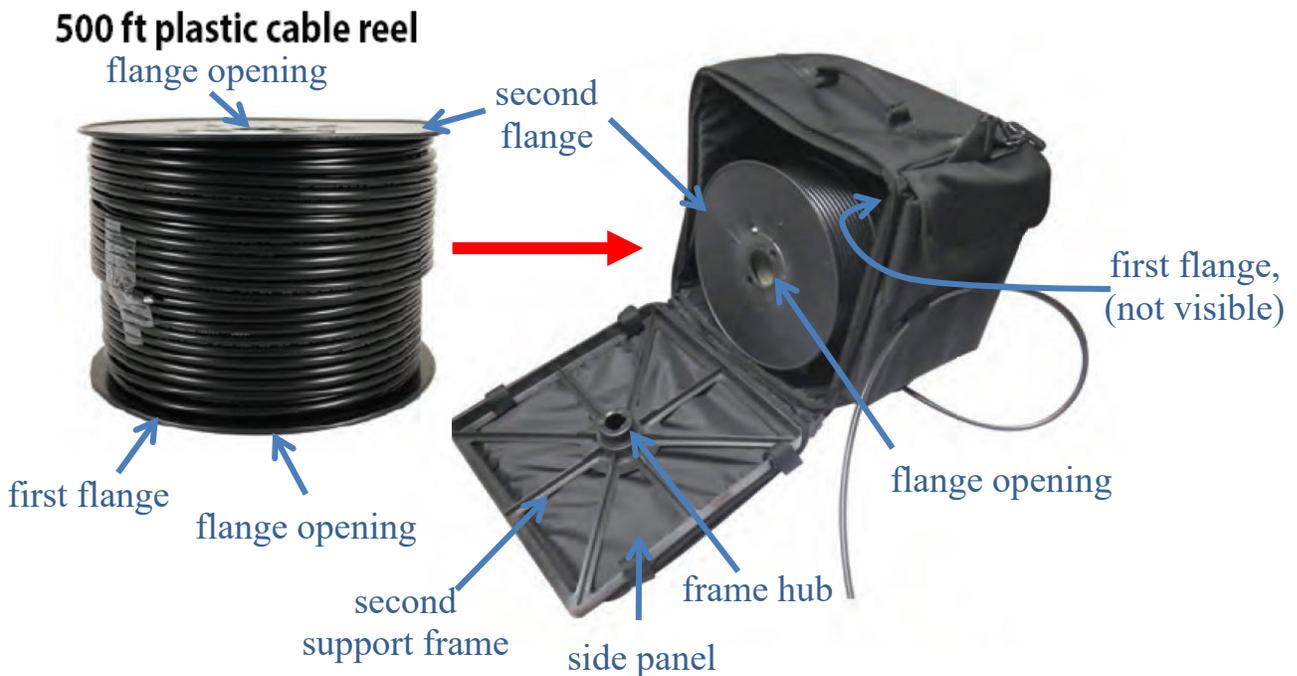
See above § IX.A; *Blunt*, FIG. 3 (annotated).

129. In this combination, a person of ordinary skill in the art would understand that this reel structure would be inserted into the bag shown in *Brochure* above. This reel structure includes a bore 70" ("central arbor opening") defined through the reel for receiving "shafts 114, 122 [of guide components 58", 60" are] directed oppositely into the bore 70"." *Blunt*, [0097]. Thus, in *Brochure* as modified by *Blunt*, a person of ordinary skill in the art would have understood that each of the first and second flanges has a central arbor opening. *Id.*

L. Claim 19 – “The method of claim 18, further comprising the step of fitting a middle [flange support] of each of the first and second support[] frames into the central arbor opening of the first and second flanges, respectively.”

130. *Brochure*, alone or in combination with *Blunt*, discloses or renders obvious claim 19.

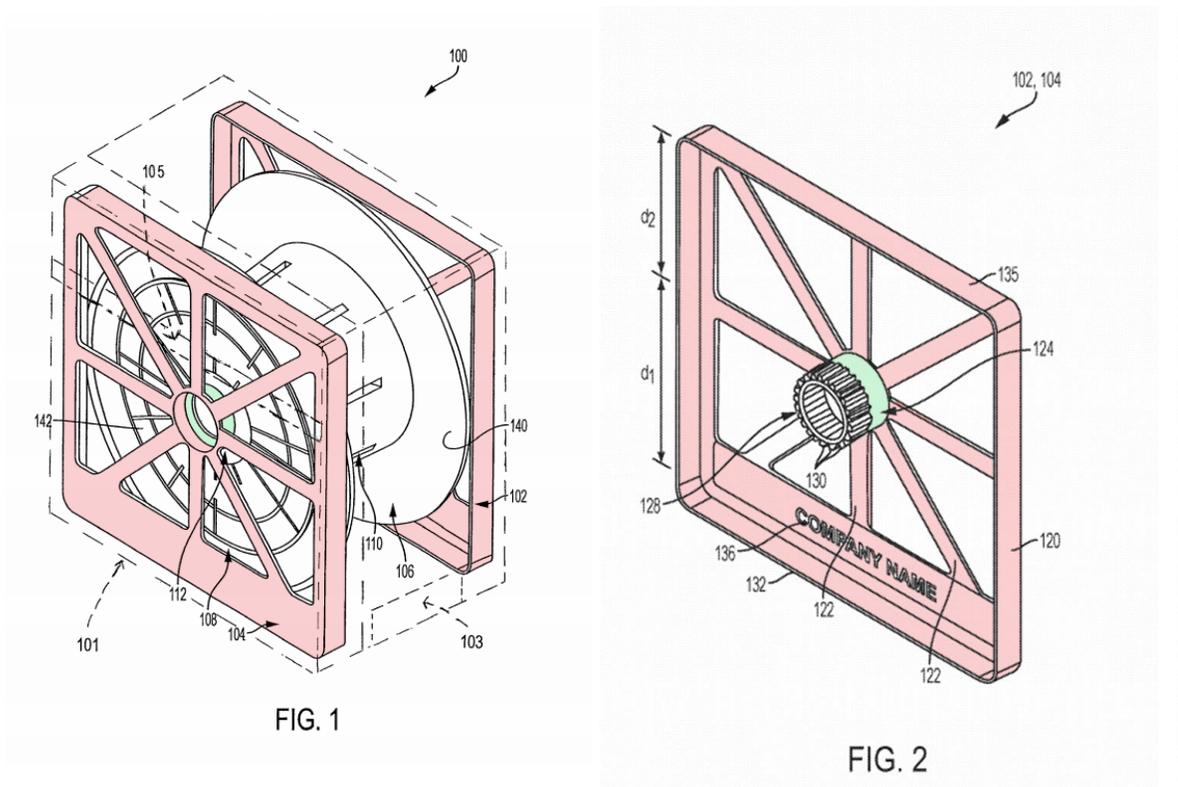
131. *Brochure* discloses fitting a frame hub (“middle flange support”) of each of the first and second support frames into the flange center hole or flange opening (“central arbor opening”) of the first and second flanges, respectively, as shown and discussed below. *Brochure*.



Brochure (annotated).

132. As discussed above, a person of ordinary skill in the art would have readily recognized that *Brochure* teaches that when the “flange center hole [is] fit[]

over the frame hub” as the cable reel is inserted into the bag in Step 1, the frame hub (“middle flange support”) of the first support frame is fit into the flange center hole (“central arbor opening”) of the flange (“first flange”) in the same manner disclosed in the ’957 patent and shown below (*see above* § IX.B.4):

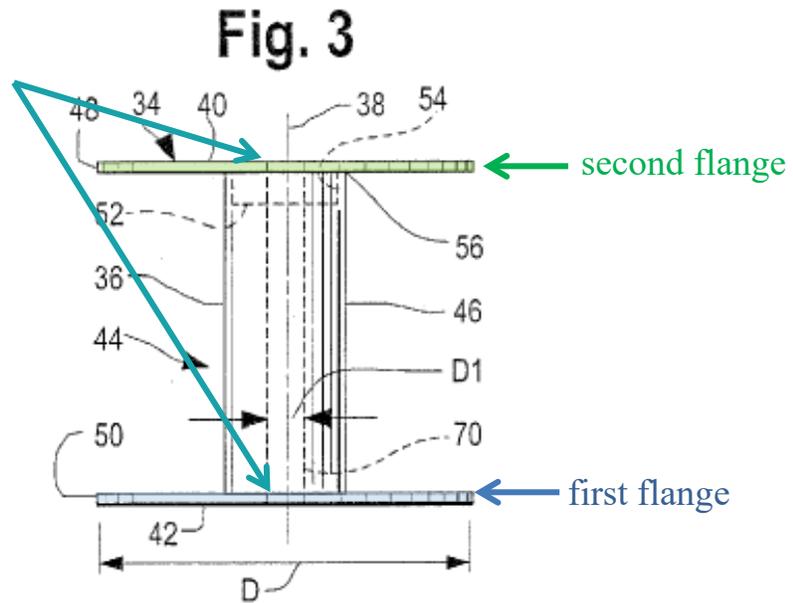


Ex. 1001, FIGS. 1-2 (annotated).

133. As also discussed above, *Brochure* discloses that when the side panel of the bag is closed, the frame hub (“middle flange support”) of the second support frame, which is attached to the side panel, fits into the flange opening (“central arbor opening”) of the second flange in the same manner as disclosed in the ’957 patent and shown above. *Brochure*; Ex. 1001, 5:34-37; *see above* § IX.B.5.

134. In addition, as discussed above, it would have been obvious to a person of ordinary skill in the art to use the *Tote* bag with the reel structure shown below:

Central arbor opening with a diameter slightly greater than the diameter of the frame hub shown in *Brochure*



See above § IX.A; *Blunt*, FIG. 3 (annotated).

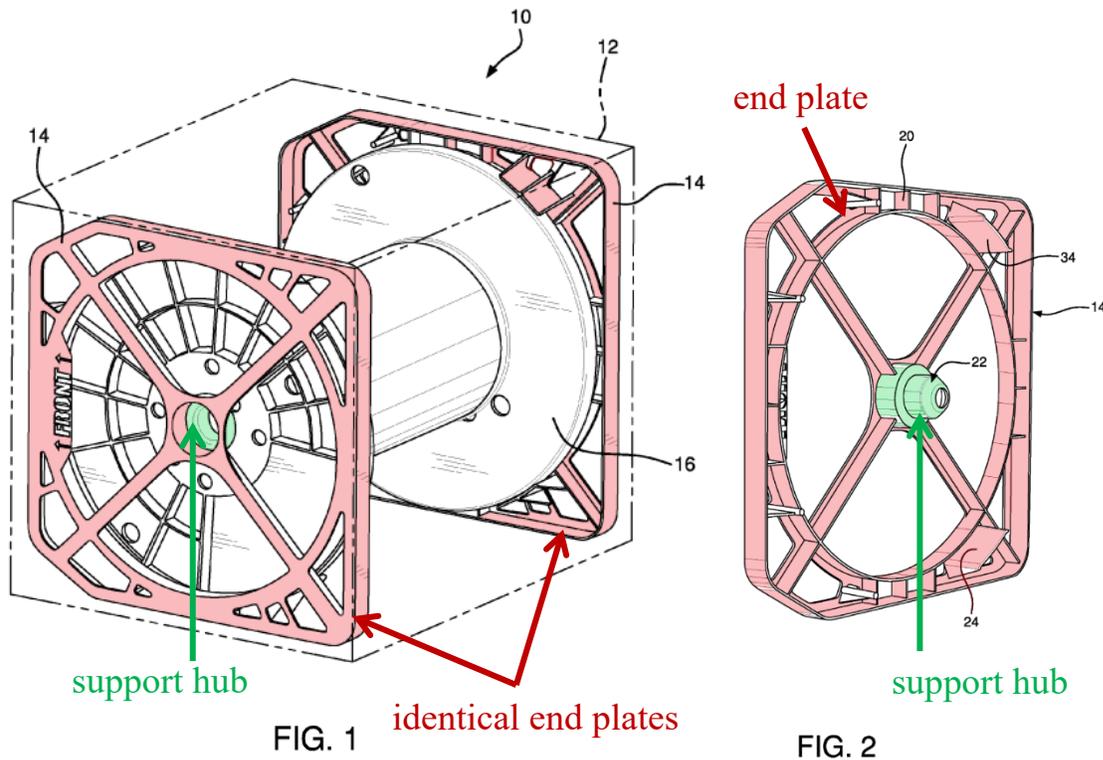
135. As discussed above regarding this combination, this reel structure includes a bore 70" ("central arbor opening") defined through the reel for receiving shafts 114, 122 directed into the bore 70" from opposite ends. *Blunt*, [0097]. A person of ordinary skill in the art would have understood that this reel structure would be inserted into the *Tote* bag as instructed by *Brochure* and that the frame hub ("middle flange support") of each of the support frames on the base and side

panel of the *Tote* bag necessarily would be fit into bore 70" of reel 34" from opposite ends, respectively, as discussed above in Sections IX.B.4 and IX.B.5.

X. [GROUND 2] THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER BROCHURE IN VIEW OF *BLUNT* AND *JOHANSON*

136. As discussed above, the combination of *Brochure* and *Blunt* renders obvious each Challenged Claim. *See above* § IX. A person of ordinary skill in the art would have understood that the *Tote* bag would have—and/or it would have been obvious to have—a duplicate support frame secured to the base of the bag (“first support frame”) on the opposite end of the “second support frame” (*see above* § IX.B.2), and the “first support frame” of the Challenged Claims is also rendered obvious in view of *Johanson*.

137. *Johanson* was published on May 10, 2011, more than a year before the assumed priority date of the '957 patent—February 27, 2015. I thus understand that *Johanson* is prior art to the '957 patent. *Johanson* discloses a cable dispenser 10 including a box 12 and a pair of duplicate end plates 14 to support a spool 16 therebetween. *Johanson*, 2:55-65. As shown below, end plates 14 each include a support hub 22 positioned in the center of the plate and are positioned at opposite ends inside the box 12 with their respective support hubs 22 projecting inwardly on opposite sides of spool 16 to rotationally support spool 16. *Id.*, 2:60-3:10. *Johanson* teaches that the end plates 14 are preferably identical with their structures positioned in mirror images. *Id.*, 2:63-65.



Johanson, FIGS. 1-2 (annotated).

138. It would have been obvious for a person of ordinary skill in the art to secure a support frame in the base (“first support frame”) of the *Tote* bag to provide duplicate support frames positioned at opposite ends of the bag in mirror images with their respective frame hubs rotationally supporting the reel of *Brochure* as modified with *Blunt*.

139. A person of ordinary skill in the art would have been motivated to secure the duplicate support frame in the base to rotatably support the reel in a stable and balanced position for cable payout, to have a simple structure, and to save cost from having to manufacture only one part. *See above* §§ VI, IX.B.2. A

person of ordinary skill in the art would have expected success in securing the duplicate frame in the base of the *Tote* bag because such modification would require only known and duplicative methods, such as using straps as for securing the second support frame to the cover of the bag. *Brochure*.

XI. CONCLUSION

140. For the reasons set forth above, in my opinion, a person of ordinary skill in the art in as described in paragraph 15 would have considered the Challenged Claims of the '957 patent to be obvious over the prior art discussed above.

141. In signing this declaration, I understand that this declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

142. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 20APR22

By: 

Charles A. Eldering, Ph.D.

Appendix A

Curriculum Vitae
Dr. Charles A. Eldering

CAsE Analysis, Inc.
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Brooklyn, NY 11207

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AREAS OF SPECIALIZATION: Extensive technical and market expertise in the areas of telecommunications, microelectronics, consumer electronics, targeted advertising, location-based services, data mining, and bioinformatics, with over 30 years of industrial experience. Highly skilled in the management and utilization of patents including infringement analysis and documentation of use of claimed technology.

EDUCATION:

- 1989 University of California; Davis, California
Ph.D. Electrical Engineering
- 1985 Syracuse University; Syracuse, New York
M.S. Solid State Science and Technology
- 1981 Carnegie Mellon University; Pittsburgh, Pennsylvania
B.S. Physics

OTHER QUALIFICATIONS:

Registered U.S. Patent Agent. Registration No. 39,180
FCC Licensed General Class Amateur Radio Operator, N3YRB

EMPLOYMENT HISTORY:

December 2013 to present:
CAsE Analysis, Inc.
Founder & President

May 2000 to December 2021
Expanse Networks/Expanse Bioinformatics
Founder and President

December 1997 to December 2013:
Technology, Patents & Licensing, Inc. (now TechPats)
Founder and President

October 1995 to November 1997:
Next Level Communications, Rohnert Park, CA
Director, Advanced Systems Engineering

September 1993 to September 1995:
General Instrument Corporation, Hatboro, PA
Manager, Fiber-to-the-Curb/Switched Digital Video Systems; March 1995 to September 1995
Manager, Broadband Systems Engineering; January 1994 to March 1995
Senior Project Engineer, Systems Engineering; September 1993 to December 1993

January 1990 to August 1993:
Alcatel, Madrid, Spain
Senior Engineer/Manager, Fiber in the Loop R&D; October 1990 to August 1993
Consultant; January 1990 to September 1990

June 1986 to August 1990:
University of California, Davis, CA
Researcher, Department of Electrical and Computer Engineering

October 1981 to May 1986:
United States Air Force, Rome Laboratory, Rome, NY
Officer

EXPERT WITNESSING:

1. *Sony Corporation and Sony Electronics Inc. v. ARRIS International plc, ARRIS Group, Inc., ARRIS Technology, Inc., ARRIS Enterprises LLC, ARRIS Solutions, Inc, and ARRIS Global Ltd. (formerly Pace Ltd.), In the Matter of Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways, and Components Thereof*, United States International Trade Commission, Washington, D.C. (Investigation No. 337-TA-1049).
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3. *Unified Patents Inc. v. Hybrid Audio, LLC*, No. IPR2016-01265 (PTAB).
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10. *PPC Broadband, Inc. d/b/a PPC v. Times Fiber Communications, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-460-TJM-DEP)
11. *PPC Broadband, Inc. d/b/a PPC v. Corning Gilbert, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-00538-GLS-DEP).
12. *PPC Broadband, Inc. v. Corning Optical Communications RF, LLC, In the Matter of Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, United States International Trade Commission, Washington, D.C. (Investigation No. 337-TA-938).
13. *BroadSoft, Inc. v. CallWave Communications, LLC*, United States District Court for the District of Delaware (DED-1-13-cv-00711-RGA).
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15. *Mediatube Corp and Northvu Inc. v. Bell Canada and Bell Aliant Regional Communications, Limited Partnership*, Canadian Federal Court (C.A. T-705-13).
16. *John Mezzalingua Associates, Inc. d/b/a PPC v. Corning Gilbert Inc.*, United States District Court for the District of Arizona (Case No. 2: 12-CV-12-02208-SMM).
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20. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00346 (PTAB).
21. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00347 (PTAB).
22. *PPC Broadband, Inc. v. Corning Gilbert Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-1310).

23. *PPC Broadband, Inc. d/b/a PPC v. Corning Gilbert, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 11-cv-00761-GLS-DEP).
24. *Corning Gilbert, Inc. v. The United States of America, et al.* in the United States Court of International Trade (Case No. 11-00511).
25. *Parus Holdings, Inc. v National Airtran Airways, Inc., Airtran Holdings, Inc., Airtran Holdings, LLC* in the United States District Court for the Middle District of Florida, Tampa Division (Case No. 8:11-cv-01685-EAK-TBM).
26. *John Mezzalingua Associates, Inc. d/b/a PPC v. International Communications Manufacturing Corporation, Randall A. Holliday, and Belden Inc.* in the United States District Court for the Western District of Wisconsin (Case No. 3:11-cv-00424-bbc).
27. *eTool Development, Inc., and eTool Patent Holdings Corp. v National Semiconductor Corporation* in the United States District Court for the Eastern District of Texas, Marshall Division (Case No. 2:08-cv-196).
28. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. PCT International, Inc.* in the United States District Court for the Western District of Texas, San Antonio Division (Case No. 5:09-cv-00410-RF).
29. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. PACE Electronics, Inc. (d/b/a PACE International) and Perfect 10 Antenna Company* in the United States District Court for the Western District of Minnesota (Case No. 0:10-cv-00064 MJD/JJG).
30. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. Hanjiang Fei Yu Electronics Equipment Factory, Zhongguang Electronics, Yangzhou Zhongguang Electronics Co., Ltd., and Yangzhou Zhongguang Foreign Trade Co., Ltd.* in Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same, United States International Trade Commission, Washington, D.C. (Investigation No. 377-TA-650).
31. *Arrow Communication Laboratories, Inc. v. John Mezzalingua Associates, Inc.*, in the Northern District of New York (Civil Action No. 05-CV-1456 (NAM/DEP) (Lead Case); 05-CV-0703 (NAM/DEP) (Member Case).
32. *Agrizap Inc. v. Woodstream Corporation* in the United States District Court for the Eastern District of Pennsylvania (Case No. 04-CV-03925-RK).
33. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. Corning Gilbert, Inc.* in the United States District Court for the Western District of Wisconsin (Case No. 03-C-0354-S).
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21. Eldering, C.A. Subscriber Loop Optical Distribution Architecture (SODA): A Cost Effective TDM/TDMA Fiber System. *Fiber Networks for Telephony and CATV*, (September, 1991).
22. Eldering, C.A. Fixed Optical Interconnects for Concurrent Computing Systems. *Optical Information Processing Systems and Architectures*, (August, 1989).

TEACHING APPOINTMENTS:

- University of California at Davis. Lecturer, Electronics Laboratory, (1987-88).
- State University of New York, Utica/Rome. Adjunct Professor, Electronics, (1985-86).

REPORTS, THESES, OTHER PUBLICATIONS:

1. Charles Eldering and Juan Gisone. Claims-based patent valuation. *Intellectual Asset Management Magazine*, (Issue 50 November/December 2011).
2. Charles A. Eldering, Technology, Patents & Licensing, Inc. and Expanse Networks, Inc., Amici Curiae Supporting MercExchange L.L.C., *eBay Inc. v. MercExchange L.L.C.*, on Writ of Certiorari to the United States Court of Appeals for the Federal Circuit (2006).
3. Keeler, P. and C.A. Eldering, S. Weiswasser, A. Weixel and H. Feld. *Reply Comments of Next Level Communications*, CC Docket No. 98-147. FCC Proceedings on Deployment of Wireline Services Offering Advanced Telecommunications Capability. (October 16, 1998).
4. Eisenach, J. and C.A. Eldering. *Comments of the Progress and Freedom Foundation*, CC Docket No. 98-146. FCC Proceedings on Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996. (September 14, 1998).
5. Eames, T., C.A. Eldering and J. Bernstein. *Reply Comments of Next Level Communications*, RM no. 9244, file no. CCB/CPD 98-15. FCC Proceedings on Petition of Alliance for Public Technology Requesting

Issuance of Notice of Inquiry and Notice of Proposed Rulemaking to Implement Section 706 of the 1996 Telecommunications Act. (May 4, 1998).

6. Eames, T., C.A. Eldering and J. Bernstein. *Comments of Next Level Communications*, CC Docket No. 98-11. FCC Proceedings on Petition of Bell Atlantic Corporation for Relief from Barriers to Deployment of Advanced Telecommunications Services. (April 6, 1998).
7. Bernstein, J., T. Eames and C.A. Eldering. *Comments of Next Level Communications*, CC Docket No. 98-32. FCC Proceedings on Petition of Ameritech Corporation to Remove Barriers to Invest in Advanced Telecommunications Capacity. (April 6, 1998).
8. Eldering, C.A. and J. Bernstein. *Comments of Next Level Communications*, CC Docket No. 98-26. Petition of US West Communications, Inc. for Relief from Barriers to Deployment of Advanced Telecommunications Services. (April 6, 1998).
9. Eames, T. and C.A. Eldering. Going All-Digital. *Telephony*, (August 18, 1997).
10. Blasko, J.P., C.A. Eldering and A. Brown. Provisional Applications Offer Patentees Priority. *National Law Journal*, (June 16, 1997).
11. Eames, T., B. Weeks and C.A. Eldering. A Winning Solution. *Telephony*, (June 2, 1997): 150-162.
12. Eldering, C.A. Analysis of Fiber to the Curb and Fiber to the Home Architectures. Internal Report prepared for *Telettra España*. (August, 1990).
13. Eldering, C.A. Electro-Optic Polymeric Thin Films and Device. *Ph.D. Dissertation*, University of California, Davis, (1997).
14. Eldering, C.A., B.J. Walker, S.P. Ilitzki and D.J. Holtzauer. Temperature Measurements Using Infrared Techniques. *Internal Government Report*, Rome Air Development Center (March, 1986).
15. Eldering, C.A. Evaluation of the Use of p-n Structures as Photodetectors in Silicon Integrated Circuits. *Master's Thesis*, (June, 1985), also published as a Government technical report, RADC-TR-85-123.

ISSUED US PATENTS:

1. U.S. Patent 11,166,074 Creating customized programming content
2. U.S. Patent 11,003,694 Learning systems for pangenetic-based recommendations
3. U.S. Patent 10,667,009 Profiling and identification of television viewers
4. U.S. Patent 10,438,240 Methods and systems using a multi-platform targeted advertising system to select advertisements within a target geographic area
5. U.S. Patent 10,379,812 Treatment determination and impact analysis
6. U.S. Patent 10,231,031 Queue based advertisement scheduling and sales
7. U.S. Patent 10,206,012 Queue based head-end advertisement scheduling method and apparatus
8. U.S. Patent 10,116,983 System and method for managing advertising in program streams
9. U.S. Patent 10,182,258 Profiling and identification of television viewers
10. U.S. Patent 10,104,414 Method and system for targeted advertisement filtering and storage
11. U.S. Patent 9,918,117 System and method for managing advertising in program streams
12. U.S. Patent 9,906,819 Advertisement management system for digital video streams
13. U.S. Patent 9,888,297 Queue based advertisement scheduling and sales
14. U.S. Patent 9,602,884 Customizing programming content
15. U.S. Patent 9,582,647 Attribute combination discovery for predisposition determination
16. U.S. Patent 9,544,631 Queue-based head-end advertisement scheduling method and apparatus

17. U.S. Patent 9,524,194 Performing services on behalf of physical devices
18. U.S. Patent 9,479,803 Alternative advertising in prerecorded media
19. U.S. Patent 9,473,814 Profiling and identification of television users
20. U.S. Patent 9,426,315 Grouping advertisement subavails
21. U.S. Patent 9,432,733 Queue based advertisement scheduling and sales
22. U.S. Patent 9,390,423 Methods and systems for verifying advertisements in a multi-platform targeted advertising system
23. U.S. Patent 9,232,252 Queue-based head-end advertisement scheduling method and apparatus
24. U.S. Patent 9,170,992 Treatment determination and impact analysis
25. U.S. Patent 9,165,604 Alternative advertising in prerecorded media
26. U.S. Patent 9,147,112 Advertisement Detection
27. U.S. Patent 9,124,949 Grouping advertisement subavails
28. U.S. Patent 9,043,827 Method and system for providing conditional access to encrypted content
29. U.S. Patent 9,031,870 Pangenetic Web User Behavior Prediction System
30. U.S. Patent 8,934,843 Weighting factor adjustment in adaptive antenna arrays
31. U.S. Patent 8,930,204 Determining lifestyle recommendations using aggregated personal information
32. U.S. Patent 8,837,920 Alternative Advertising in prerecorded media
33. U.S. Patent 8,813,126 Advertisement Filtering and Storage for Targeted Advertisement Systems
34. U.S. Patent 8,789,091 Queue based advertisement scheduling and sales
35. U.S. Patent 8,788,286 Side effects prediction using co-associating bioattributes
36. U.S. Patent 8,788,283 Modifiable attribute identification
37. U.S. Patent 8,776,111 Methods and systems for generating subscriber usage profiles in a multi-platform targeted advertising system
38. U.S. Patent 8,775,287 Method and system for determining insurance needs
39. U.S. Patent 8,677,401 Grouping advertisement subavails
40. U.S. Patent 8,667,536 Profiling and identification of television viewers
41. U.S. Patent 8,655,915 Pangenetic web item recommendation system
42. U.S. Patent 8,655,908 Predisposition modification
43. U.S. Patent 8,655,899 Attribute method and system
44. U.S. Patent 8,635,087 Aggregating personal information
45. U.S. Patent 8,634,652 Video entity recognition in compressed digital video streams
46. U.S. Patent 8,606,761 Lifestyle optimization and behavior modification
47. U.S. Patent 8,581,873 Elastomeric wave tactile Interface
48. U.S. Patent 8,577,296 Weighting factor adjustment in adaptive antenna arrays
49. U.S. Patent 8,570,938 Method and system for adaptive antenna array pairing
50. U.S. Patent 8,484,677 Advertisement monitoring system
51. U.S. Patent 8,473,457 Method of distributing contact and calendar records
52. U.S. Patent 8,458,121 Predisposition prediction using attribute combinations

- 53. U.S. Patent 8,458,097 System, method and software for healthcare selection based on Pangenetic data
- 54. U.S. Patent 8,452,619 Masked data record access
- 55. U.S. Patent 8,424,043 Method and system for detecting unscheduled events and recording Programming streams
- 56. U.S. Patent 8,417,675 Method of distributing contact and calendar records
- 57. U.S. Patent 8,386,519 Pangenetic web item recommendation system
- 58. U.S. Patent 8,374,387 Video entity recognition in compressed digital video streams
- 59. U.S. Patent 8,365,216 Video stream modification to defeat detection
- 60. U.S. Patent 8,358,204 Dynamic tactile interface
- 61. U.S. Patent 8,346,307 Method of displaying contact information
- 62. U.S. Patent 8,335,854 Performing services on behalf of low-power devices
- 63. U.S. Patent 8,326,648 System for secure mobile healthcare selection
- 64. U.S. Patent 8,306,975 Expanded interest recommendation engine and variable personalization
- 65. U.S. Patent 8,290,351 Alternative advertising in prerecorded media
- 66. U.S. Patent 8,280,633 Weather risk estimation system and method
- 67. U.S. Patent 8,273,425 Nanotube assisted self-cleaning material
- 68. U.S. Patent 8,266,256 Virtualization for low-power networks
- 69. U.S. Patent 8,258,956 RFID tag filtering and monitoring
- 70. U.S. Patent 8,255,403 Pangenetic web satisfaction prediction system
- 71. U.S. Patent 8,253,703 Elastomeric wave tactile interface
- 72. U.S. Patent 8,234,244 Method of distributing contact and calendar records
- 73. U.S. Patent 8,225,347 Advertisement filtering and storage for targeted advertisement systems
- 74. U.S. Patent 8,224,835 Expanding attribute profiles
- 75. U.S. Patent 8,209,319 Compiling co-associating bioattributes
- 76. U.S. Patent 8,200,509 Masked data record access
- 77. U.S. Patent 8,185,597 Providing notifications to an individual in a multi-dimensional personal information network
- 78. U.S. Patent 8,185,461 Longevity analysis and modifiable attribute identification
- 79. U.S. Patent 8,180,675 System and method for automatically managing avail inventory data and avail pricing
- 80. U.S. Patent 8,151,295 Queue based advertisement scheduling and sales
- 81. U.S. Patent 8,150,422 Method of displaying contact information
- 82. U.S. Patent 8,126,486 Adaptive antenna weighting system for wireless local area and personal area networks
- 83. U.S. Patent 8,121,915 Generating financial plans using a personal information aggregator
- 84. U.S. Patent 8,116,616 Alternative advertising in prerecorded media
- 85. U.S. Patent 8,108,406 Pangenetic web user behavior prediction system
- 86. U.S. Patent 8,099,424 Treatment determination and impact analysis
- 87. U.S. Patent 8,087,045 Grouping advertisement subavails

- 88. U.S. Patent 8,077,021 Dynamic tactile interface
- 89. U.S. Patent 8,075,980 Diffraction grating assisted self-cleaning material
- 90. U.S. Patent 8,073,708 Aggregating personal healthcare information
- 91. U.S. Patent 8,073,194 Video entity recognition in compressed digital video streams
- 92. U.S. Patent 8,072,314 Secondary card reader
- 93. U.S. Patent 8,065,324 Weight and diet attribute combination discovery
- 94. U.S. Patent 8,055,643 Predisposition modification
- 95. U.S. Patent 8,051,033 Predisposition prediction using attribute combinations
- 96. U.S. Patent 8,046,798 Profiling and identification of television viewers
- 97. U.S. Patent 8,024,348 Expanding attribute profiles
- 98. U.S. Patent 7,984,466 Advertising management system for digital video streams
- 99. U.S. Patent 7,970,827 Providing notifications to an individual in a multi-dimensional personal information network
- 100.U.S. Patent 7,962,934 Advertising monitoring system
- 101.U.S. Patent 7,952,480 RFID tag filtering and monitoring
- 102.U.S. Patent 7,949,565 Privacy-protected advertising system
- 103.U.S. Patent 7,941,434 Efficiently compiling co-associating bioattributes
- 104.U.S. Patent 7,941,329 Insurance optimization and longevity analysis
- 105.U.S. Patent 7,933,912 Compiling co-associating bioattributes using expanded bioattribute profiles
- 106.U.S. Patent 7,930,714 Video detection and insertion
- 107.U.S. Patent 7,917,438 System for secure mobile healthcare selection
- 108.U.S. Patent 7,870,576 Targeted advertising through electronic program guide
- 109.U.S. Patent 7,844,609 Attribute combination discovery
- 110.U.S. Patent 7,818,310 Predisposition modification
- 111.U.S. Patent 7,810,114 Advertisement filtering and storage for targeted advertisement systems
- 112.U.S. Patent 7,809,154 Video entity recognition in compressed digital video streams
- 113.U.S. Patent 7,801,956 Providing notifications to an individual in a multi-dimensional personal information network
- 114.U.S. Patent 7,797,302 Compiling co-associating bioattributes
- 115.U.S. Patent 7,694,318 Video detection and insertion
- 116.U.S. Patent 7,690,013 Advertisement monitoring system
- 117.U.S. Patent 7,690,011 Video stream modification to defeat detection
- 118.U.S. Patent 7,689,682 Obtaining lists of nodes of a multi-dimensional network
- 119.U.S. Patent 7,500,258 Advertisement subgroups for digital streams
- 120.U.S. Patent 7,440,674 Alternative advertising in prerecorded media
- 121.U.S. Patent 7,432,811 RFID tag filtering and monitoring
- 122.U.S. Patent 7,420,458 Secondary card reader
- 123.U.S. Patent 7,331,057 Grouping advertisement subavails

- 124.U.S. Patent 7,328,448 Advertisement distribution system for distributing targeted advertisements in television systems
- 125.U.S. Patent 7,313,811 Optical conversion device
- 126.U.S. Patent 7,298,264 RFID tag filtering and monitoring
- 127.U.S. Patent 7,260,823 Profiling and identification of television viewers
- 128.U.S. Patent 7,240,355 Subscriber characterization system with filters
- 129.U.S. Patent 7,177,844 Apparatus and method for activation of a security module in a set-top retail environment
- 130.U.S. Patent 7,152,237 Delivering advertisements to the set-top-box
- 131.U.S. Patent 7,150,030 Subscriber characterization system
- 132.U.S. Patent 7,062,510 Consumer profiling and advertisement selection system
- 133.U.S. Patent 7,039,932 Queue-based head-end advertisement scheduling method and apparatus
- 134.U.S. Patent 6,915,530 Ingress detection and characterization by time/frequency map
- 135.U.S. Patent 6,882,709 Enhanced broadband telephony services
- 136.U.S. Patent 6,880,170 Ingress detection and attenuation
- 137.U.S. Patent 6,820,277 Advertising management system for digital video streams
- 138.U.S. Patent 6,714,917 Subscriber identification based on electronic program guide data
- 139.U.S. Patent 6,704,930 Advertisement insertion techniques for digital video streams
- 140.U.S. Patent 6,684,194 Subscriber identification system
- 141.U.S. Patent 6,615,039 Advertisement subgroups for digital streams
- 142.U.S. Patent 6,560,578 Advertisement selection system supporting discretionary target market characteristics
- 143.U.S. Patent 6,457,010 Client-server based subscriber characterization system
- 144.U.S. Patent 6,324,519 Advertisement auction system
- 145.U.S. Patent 6,321,384 Noise reduction in cable return paths
- 146.U.S. Patent 6,317,884 Video, data, and telephony gateway
- 147.U.S. Patent 6,298,348 Consumer profiling system
- 148.U.S. Patent 6,216,129 Advertisement selection system supporting discretionary target market characteristics
- 149.U.S. Patent 6,078,593 Method and apparatus for reliable operation of universal voice grade cards
- 150.U.S. Patent 5,881,362 Method of ingress noise reduction in cable return paths
- 151.U.S. Patent 5,742,591 Interference cancellation system for CATV return transmissions
- 152.U.S. Patent 5,479,451 Method and device for data recovery in burst mode systems
- 153.U.S. Patent 5,408,525 Diverter interface between two telecommunication lines and a station set
- 154.U.S. Patent 5,357,588 Opto-electronic transducer device for optical link termination equipment and application thereof to various types of optical link
- 155.U.S. Patent 4,813,772 Electro-optical interface
- 156.U.S. Patent 4,698,587 Method of characterizing critical timing paths and analyzing timing related failure modes in very large scale integrated circuits

FUNDED RESEARCH PROPOSALS:

- Raised \$3.6 million in capital (December 1999 through April 2000) for Expanse Networks, Inc. for development of systems and intellectual property in the area of targeted advertising.
- Kowel, S.T., A. Knoesen (principal investigators) and C.A. Eldering (proposal co-author), *Polymeric Ultrathin Film Multilayered Modulators*, funded by NSF Quantum Electronics, Waves and Beams Program for approximately \$300,000 over 3 years.

PROFESSIONAL ACTIVITIES AND PUBLIC RECOGNITION:

- Recognized in *IAM Strategy 250 – The World’s Leading IP Strategists* published by *Intellectual Asset Management (IAM) Magazine* (2009-2011). *IAM Strategy 300* (2012-2013).
- Certified Passive Home Consultant, *Passive Home Institute*.
- Guest Editor. Feature topic: Patents and Telecommunications. *IEEE Communications Magazine* (July, 2000).
- Cited in “Who Owns the Knowledge Economy? Patent Wars.” *The Economist*, (April 8-14, 2000).
- Cited in “Access: Not a Rocket Science” *Cable World*, (February, 2000).
- Cited in “Patents Considered Vital to Thrive on the Internet.” *New York Times Outlook 2000*, (December, 1999).
- Guest Editor for Feature topic: Broadband Technologies and Trials. *IEEE Communications Magazine* (October, 1999).
- Guest Editor for Feature topic: Broadband Deployment in a Deregulated Environment. *IEEE Communications Magazine* (July, 1998).
- Member of *Network Reliability and Interoperability Council* and contributor to NRIC reports to FCC on interoperability and telecommunications deregulation.
- Senior Member, *IEEE*.
- Chair, *Access Subcommittee of IEEE Communications Society*.
- Member, Technical Program Committee and Session Chair, *IEEE Communications Society Broadband ‘96 Conference*.
- Invited speaker, 1995 *IEEE/LEOS Summer Topical Meeting*.
- Co-chair, 1991 *SPIE Fibers ‘91 Conference*.
- Chair, 1993 *SPIE Conference on LANs and MANS*.
- Invited participant, 1990 *Gordon Conference on Organic Thin Films*.

LANGUAGES:

- English: native language
- Spanish: speak, read, and write
- Portuguese: speak, read and write
- German: working knowledge
- Italian: working knowledge