



(51) International Patent Classification:

B65H 16/00 (2006.01) **F16L 55/00** (2006.01)
B65H 23/18 (2006.01) **F16L 55/18** (2006.01)
B65H 37/00 (2006.01) **F16L 15/08** (2006.01)

(21) International Application Number:

PCT/CA2009/000436

(22) International Filing Date:

15 April 2009 (15.04.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/129,194 10 June 2008 (10.06.2008) US

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AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

[Continued on next page]

(54) Title: HAND HELD NON-ADHESIVE TAPE DISPENSER WITH FRICTION BRAKES

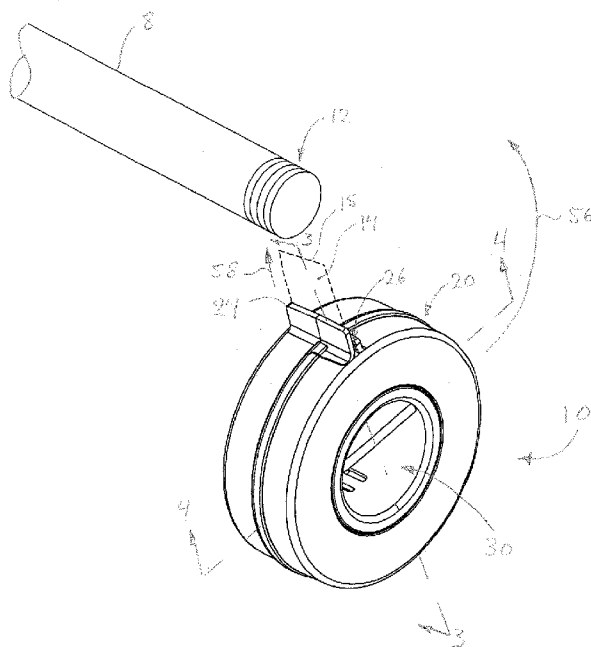


Fig. 1

(57) Abstract: Disclosed is an apparatus and method for dispensing non-adhesive tape carried on a spool to an article wherein the spool has a spool bore therethrough. The apparatus comprises a casing having a casing bore therethrough adapted to rotatably receive a support member therein. The apparatus further comprises a spool support for resistively and rotatably supporting the spool around the casing bore and a dispenser portion located in the casing for dispensing the non-adhesive tape therethrough. The method comprises supporting the casing on a support member located within the casing bore and securing a free end of the tape to the article through a dispenser portion of the casing. The method further comprises rotating the spool within the casing as to unwind the non-adhesive tape while the casing is moved around the article with the dispenser portion maintained in radial alignment with the article.



Published:

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

-1-

HAND HELD NON-ADHESIVE TAPE DISPENSER WITH FRICTION BRAKES**BACKGROUND OF THE INVENTION****1. Field of Invention**

5 The present invention relates to dispensing tape in general and in particular to a method and apparatus for dispensing non-adhesive tapes.

2. Description of Related Art

10 Pipes are often connected to each other by threaded ends. It is known that for such connections a threaded seal tape is typically used to seal the connection. A commonly used threaded seal tape is polytetrafluoroethylene tape or PTFE tape commonly known as plumbers tape or Teflon® tape. PTFE tape is typically sold in a roll having a hole through the middle. In use, the PTFE tape may be wrapped around the exposed end of the threads of a
15 pipe before it is screwed into an adjoining connector or pipe. A typical method of wrapping PTFE tape is for the user to grip the roll of PTFE tape between their thumb and one of their fingers. The user may then apply frictional resistance to the unwinding of the tape by squeezing the roll of PTFE tape therebetween.

20 PTFE tape is known to have low friction for lubricating the connection between the pipes. PTFE tape also typically does not use an adhesive to secure it to the pipe, but rather while the PTFE tape is being wrapped around the pipe, tension is applied to the tape to pull the tape into the threads and
25 plastically deforms the tape to the threads.

A common problem with PTFE tape is the fact that it lacks an adhesive. This may result in the tape freely unraveling from the roll if it is inadvertently released by the user. This may result in excessive amounts of tape unwound
30 from the roll which may then become dirty or tangled. Such tangled portions of the tape are often discarded and therefore wasted.

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An additional difficulty with PTFE tape is the fact that it is applied by the user applying a tension to the tape so as to deform the tape into the threads. Because PTFE tape has no adhesive and therefore no resistance to being freely unwound from the roll, the PTFE tape itself does not provide a tension to the tape to secure it to the threads. It is therefore required that the user apply an appropriate level of tension to the tape for application to the threads. Tension is typically applied by the user maintaining a frictional grip on the roll as the tape is unwound therefrom. The user may therefore control the amount of friction applied to the tape by controlling their grip on the roll. This may be difficult to accurately or consistently control in many situations or for people with less experience and practice.

SUMMARY OF THE INVENTION

According to a first embodiment of the present invention there is provided a method for dispensing non-adhesive tape carried on a spool to an article wherein the spool has a spool bore therethrough. The method comprises providing a casing having a casing bore therethrough wherein the casing resistively and rotatably supports the spool around the casing bore. The method further comprises supporting the casing on a support member located within the casing bore and securing a free end of the tape to the article through a dispenser portion of the casing. The method further comprises rotating the spool within the casing as to unwind the non-adhesive tape while the casing is moved around the article with the dispenser portion maintained in radial alignment with the article.

The support may comprise a finger of a user. The dispensing portion may compressibly grip the non-adhesive tape. The casing may rotate around the support while the casing is moved around the article. The casing may rotate on the support. The casing may rotate on a bearing secured to the support

According to a further embodiment of the present invention there is provided an apparatus for dispensing non-adhesive tape carried on a spool to an article wherein the spool has a spool bore therethrough. The apparatus comprises a

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5 casing having a casing bore therethrough adapted to rotatably receive a support member therein. The apparatus further comprises a spool support for resistively and rotatably supporting the spool around the casing bore and a dispenser portion located in the casing for dispensing the non-adhesive tape therethrough.

The support member may comprise a finger of a user. The casing may include a hub being concentric with the spool.

10 The casing may include a sleeve having the casing bore therein wherein the casing is rotatable about the sleeve. The sleeve and the casing may include a bearing therebetween. The sleeve may have a central axis wherein the casing is rotatable about the sleeve about the central axis. The spool may be rotatable about the central axis. The sleeve may be adapted to grip the
15 support member. The sleeve may be adapted to slidably receive the support member.

One of the spool or the casing may include a biased protrusion adapted to engage one of a plurality of corresponding notches in the other of the spool or
20 the casing. The plurality of notches may be oriented radially around the casing bore such that rotation of the spool within the casing will cause the protrusion to engage successive notches. The notches may be located on the hub, wherein the protrusion radially extends inwardly from the spool. The spool may include a spool axis and sidewalls perpendicular thereto. The
25 notches may be located on at least one inner surface of the casing adjacent to the spool wherein the protrusion extends from a corresponding sidewall to the at least one inner surface.

The notches may be located on at least one side wall wherein the protrusion
30 extends from a corresponding inner surface of the casing to the at least one sidewall.

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5 The spool may include an inner cylinder. The casing may include first and second sides wherein the inner cylinder is frictionally engaged by the first and second sides of the casing. The apparatus may further comprise friction assisting pads between the inner cylinder and the first and second sides of the casing.

10 The spool includes side walls extending radially from the inner cylinder. The casing includes first and second sides wherein the side walls are frictionally engaged by the first and second sides of the casing. The apparatus further comprises friction assisting pads between the side walls and the first and second sides of the casing. The dispenser portion may frictionally bear against the non-adhesive tape passing therethrough.

BRIEF DESCRIPTION OF THE DRAWINGS

15 In drawings which illustrate embodiments of the invention wherein similar characters of reference denote corresponding parts in each view,

Figure 1 is a perspective view of an apparatus according to the present invention applying an adhesiveless tape to the threads of a pipe.

Figure 2 is an exploded perspective view of the apparatus of Figure 1.

20 Figure 3 is a cross-sectional view of the apparatus of Figure 1 taken along the line 3-3 showing an indexed resistor according to a first embodiment of the apparatus.

Figure 4 is a cross-sectional view of the apparatus of Figure 1 taken along the line 4-4 showing an indexed resistor according to a further embodiment of the apparatus with the spool advanced to illustrate the indexed ring.

25 Figure 5 is a cross-sectional view of the apparatus of Figure 1 taken along the line 4-4 showing a frictional resistor according to a further embodiment of the apparatus.

30 Figure 6 is a cross-sectional view of the apparatus of Figure 1 taken along the line 4-4 showing an alternate frictional resistor according to a further embodiment of the apparatus.

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- Figure 7 is a perspective view of the apparatus of Figure 1 having a tensile member for gripping the finger of a user.
- Figure 8 is a perspective view of a biased wall member for gripping the finger of a user within the finger hole of the apparatus of Figure 1.
- 5 Figure 9 is a perspective view of an apparatus according an alternative embodiment of the present invention having a selectably refillable casing.
- Figure 10 is a cross sectional detail view the dispensing portion of the apparatus of Figure 1 according to an alternative embodiment.
- 10 Figure 11 is a cross sectional detail view the dispensing portion of the apparatus of Figure 1 according to an alternative embodiment.
- Figure 12a is an side elevation view of the apparatus of Figure 1 applying PTFE tape to a pipe at a first position.
- Figure 12b is an side elevation view of the apparatus of Figure 1 applying PTFE tape to a pipe at a second position.
- 15 Figure 13 is an exploded perspective view of the apparatus of Figure 1 without a finger sleeve according to a further embodiment of the present invention.

20 DETAILED DESCRIPTION

Referring to Figure 1, pipes 8 commonly include a threaded end 12 for securing to fittings and other pipes. The threaded end 12 may be wrapped with a thread seal tape or PTFE tape 14 to seal the resulting connection. An apparatus according to a first embodiment of the invention for applying an adhesiveless tape to an article is shown generally at 10 applying PTFE tape to the threaded end 12 of the pipe 8. Although the apparatus of the present invention is illustrated and described as applying PTFE tape to threads of a pipe, it will be appreciated that other kinds of adhesiveless tape may also be applied by the present apparatus, including, by way of non-limiting example, ribbon or other types of thread seal tape.

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The apparatus 10 comprises a casing 20 supporting a spool (as shown in Figure 2) of PTFE tape having a finger hole 30 through the center of the

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dispenser for receiving the finger of a user. The apparatus **10** may also include a dispensing portion **24** having a slot **26** there through for receiving PTFE tape to be applied to the treaded end **12** of the pipe **8**. In some embodiments, the slot **26** may squeeze or bear upon the PTFE tape as it passes therethrough for the purposes of guiding the PTFE tape such as, for example with a friction pad **27** as illustrated in Figure **11**. It will be appreciated that in some embodiments, the slot **26** may have raised side walls or edges extending from the dispensing portion so as to enclose the slot **26** so as to prevent the PTFE tape **14** from being drawn from the apparatus **10** from a side direction. A slot **26** with such side edges will fully enclose the slot **26** so as to retain the PTFE tape **14** therein.

In operation, a user may place their finger through the finger hole **30** and apply an end of the PTFE tape to the threaded end **12**. Thereafter the user may run their finger in a substantially circular motion around the threaded end as indicated by arrow **56** such that the dispensing portion **24** is maintained as the most proximate portion of the apparatus **10** to the threaded end **12**. Accordingly, it will be appreciated that the apparatus **10** is retained in a radial orientation as indicated by the arrow **58** about the threaded end **12** of the pipe **8** by the PTFE tape **14** remaining in radial alignment with the pipe **8**.

Turning to Figure **2**, an exploded view of one embodiment of the apparatus **10** is illustrated. The apparatus **10** includes the back casing **22**, a front casing **40**, and a finger sleeve **50**. As illustrated, a spool **80** of PTFE tape is retained between the front and back casings **40** and **22**. The back casing **22** includes a backing plate **32** and a spool support sleeve **34** projecting therefrom. As illustrated the backing plate **32** has a circular outline although it will be appreciated that other shapes may be useful as well, such as for example, cup shaped. The back casing **22** may also have an enclosing wall **18** having a distal edge **19** extending around a periphery thereof. The spool support sleeve **34** has an outer surface **36** and an inner surface **38** and an end edge **39**.

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5 The front casing **40** comprises an annular front plate **42** adapted to retain the spool **80** of PTFE tape **14** between the front plate **42** and the backing plate **32**. The front casing also includes a front enclosing wall **44** extending from the peripheral edge of the front plate **42**. The front enclosing wall **44** includes a distal edge **43** adapted to engage the distal edge **19** of the rear enclosing wall **18**. The front plate **42** also has a front bore **46** therethrough defined by an inner edge **45** of the front plate **42**. The front bore **46** corresponds with and is adapted to engage with the end edge **39** of the spool support sleeve **34**. The finger sleeve **50** comprises a cylindrical body having inner and outer surfaces **52** and **54**, respectively wherein the inner surface **52** defines the finger hole **30**.

15 The spool **80** of PTFE tape **14** comprises a central cylinder **82** having an outer surface **84** around which the PTFE tape **14** is wound and an inner surface **86**. The spool **80** may optionally include first and second side walls **88** and **90**, respectively. It will be appreciated that the PTFE tape **14** may be wound directly onto the outer surface **84** of the cylinder **82**. Optionally, the PTFE tape **14** may be wound onto a disposable cylinder that is secured to the central cylinder **82** such that existing spools of PTFE tape **14** may be used in the current apparatus without modification or such that replacement spools of PTFE tape may be inserted into the apparatus **10**.

25 The apparatus **10** is assembled by locating the spool **80** of PTFE tape **14** on the outer surface **36** of the spool support sleeve **34**. The front casing **40** is then secured to the back casing **22** such that the end edge **39** of the spool support sleeve **34** engages the inner edge **45** of the front plate **42** and the distal edge of the back enclosing wall **18** engages the distal edge **43** of the front enclosing wall **44**. The front casing **40** may be secured to the back casing by providing a clip on one of the front or back casing that engages a corresponding catch or by any other known method of securing two halves of a casing together. The finger sleeve **50** is then located within the casing **20** such that outer surface **54** is supported within the bore defined by inner surface **38** of the spool support sleeve **34**. The finger sleeve **50** may be

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secured within the casing **20** with a locking ring **53**. As illustrated, the finger sleeve **50** may include clips **55** at a free distal end **57** thereof for engaging the locking ring. As illustrated in Figure **2**, the finger sleeve **50** and locking ring **53** may span both the front and back casings **40** and **22** so as to retain both of these components therebetween. This embodiment is also illustrated in cross section in Figure **4**. It will be appreciated that in such embodiments, the casing **20** will not be openable without first removing the locking ring **53** from the finger sleeve **50**. In alternative embodiments, the locking ring **53** and finger sleeve may retain only the spool support sleeve **34** of the back casing **22** therebetween as illustrated in cross section in Figure **5**. In these embodiments, it will be appreciated that the casing **20** may be opened without the need to disengage the locking ring **53** from the finger sleeve **50** such that the apparatus **10** may be more readily refilled with new spools **80** of PTFE tape **14**. Other connections between the finger sleeve **50** and the locking ring **53** may also be utilized, such as, for example, threading or adhesives. As illustrated, the finger sleeve **50**, the spool support sleeve **34** and spool **80** of PTFE tape **14** are coaxial about axis **28** in the present embodiment.

Referring to Figure **3**, the spool **80** of PTFE tape **14** is rotatable relative to the backing plate **32** and spool support sleeve **34** such that the PTFE tape **14** may be unspooled therefrom as indicated by arrow **59**. In other words, the tape spool **80** or reel is permitted to operate or rotate relative to the casing **20** of the dispensing apparatus **10**. This may be accomplished by permitting the central cylinder **82** of the spool **80** of PTFE tape **14** to resistively rotate relative to the spool support sleeve **34**. It will be appreciated that therefore the spool **80** of PTFE tape **14** is rotating relative to the back casing **22** and therefore the casing **20** as a whole. In operation, the spool **80** will be caused to be rotated relative to the casing **20** by the unwinding of the PTFE tape **14** therefrom as the apparatus is rotated around a pipe **8** and the PTFE tape applied to the pipe.

Turning now to Figures **12a** and **12b**, an apparatus **10** according to the present invention is illustrated in a plurality of positions while dispensing PTFE

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tape **14** to the threaded end **12** of a pipe **8**. As illustrated in Figure **12a**, the apparatus is oriented below the pipe **8** such that the dispensing portion is oriented at the uppermost portion of the apparatus **10** approximate to the pipe **8**. As illustrated in Figure **12a**, the protrusion **66** and dispensing portion are
5 radially aligned within the apparatus. As illustrated in Figure **12b**, the apparatus **10** has now been rotated around the pipe **8** wherein the dispensing portion is now oriented to the side of the apparatus **10** but still in the most proximate position to the pipe of the apparatus end. It will also be observed that between the positions illustrated in Figures **12a** and **12b**, the spool **80** of
10 PTFE tape **14** has rotated relative to the casing of the apparatus in the course of unwinding the PTFE tape **14** from the spool **80**. The amount of rotation between the spool **80** and the casing **20** is illustrated by angle **100** between the protrusion **66** and the dispensing portion **24**.

15 The amount of resistance between the spool **80** of PTFE tape **14** and the back casing **22** is provided by a resistive device as further described below and should be selected to prevent the PTFE tape **14** from freely unrolling. In practice the amount of resistance between the spool **80** of PTFE tape and the back casing **22** should be selected such that the PTFE tape **14** will not freely
20 unravel from the apparatus **10** should the apparatus be dropped by the user. Put another way, the amount of resistance between the PTFE tape and the backing body constitutes a braking mechanism and should be sufficient to support the weight of the apparatus **10** and the spool **80** of PTFE tape **14** when the apparatus is suspended by the free end **15** of the PTFE tape **14**.

25 In some embodiments, the amount of resistance between the spool **80** of PTFE tape **14** and the backing body should be selected to ensure that a desired amount of tension is applied to the PTFE tape **14** when in use by a user such that the PTFE tape **14** is embedded within the threads of the pipe **8**.
30 The amount of resistance should also be selected to be high enough to support the weight of the apparatus **10** with a full spool **80** of PTFE tape **14** includes so as to prevent the unwinding of the PTFE tape **14** from the apparatus should the user let go of the apparatus when a free end of the

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PTFE tape is secured to the article. In addition, the amount of tension applied to the PTFE tape **14** should be less than the tensile strength of the PTFE tape **14** so as to prevent unwanted breaking of the PTFE tape during application to an article. It will be appreciated that the actual amount of resistance provided by the apparatus should therefore be selected based upon the type, width and thickness of the adhesiveless tape with which the apparatus is intended to be used.

The spool support sleeve **34** is also rotatable relative to a finger of a user located in the finger hole **30**. This may be accomplished by permitting the finger sleeve **50** to rotate relative to the spool support sleeve **34**. In such embodiments the finger sleeve **50** may be sized to snugly surround the finger of a user. In such an embodiment, the close snug fit of the finger sleeve **50** on the finger of the user will also assist in preventing the user from inadvertently dropping the apparatus **10**. Roller bearings, journal bearings or bushings may be utilized to permit rotation of the spool support sleeve **34** on the finger sleeve **50**. A pad **31** or other similar cushioning device may be provided within the finger hole **30** so enable the finger hole **30** to snugly accommodate a variety of finger sizes. Optionally, a biased member **33** spanning the finger hole as illustrated in Figure 7 may be used to grip the finger of a user. A gripping member having semi-circular **35** and a biased wall **37** as illustrated in Figure 8 may be located within the finger hole wherein the biased wall **37** is adapted to grip the finger of a user. It will be appreciated that the finger hole **30** and any gripping device located therein may be sized to fit a variety of fingers. It will also be appreciated that other support objects, such as, for example, rods and the like may also be located within and gripped in the finger hole as described above. Gripping the finger of a user within the finger hole **30** will secure the apparatus **10** to the finger of the user when not in use. It will therefore be appreciated that gripping the finger with the pad **31** or other similar device will prevent the apparatus **10** from being inadvertently dropped.

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As illustrated in Figures 13, the apparatus 10 may be assembled without the finger sleeve 50 such that the finger bore may be defined by the spool support sleeve 34. In such an embodiment, the finger of the user may be received within the finger hole 30 formed by the spool support sleeve 34 and may to
5 freely rotate within the finger hole 30.

As illustrated in Figure 3, the resistive device may include a biased protrusion 66 radially extending from the inner surface 86 of the central cylinder 82 of the spool 80. The protrusion 66 may be biased by a pair of biasing arms 67
10 extending circumferentially around the central cylinder 82 to bias the protrusion 66 radially inward. An indexing ring 60 is disposed on the outer surface 36 of the spool support sleeve 34. The indexing ring 60 comprises a plurality of alternating indentations and ridges 62 and 64, respectively. The protrusion 66 cooperates with the ridges 62 so as to index the motion of the
15 spool 80 relative to the spool support sleeve 34 as the spool is rotated relative to the spool support sleeve 34 in the direction generally indicated at 68. It will also be appreciated that the outer sleeve may include the plurality of alternating ridges and indentations while the spool support sleeve 34 includes the protrusion 66 extending radially therefrom. It will also be appreciated that
20 although two protrusions are shown in Figure 3, a single or a plurality of protrusions may be arranged around the central cylinder 82. It will also be appreciated that the central cylinder 82 of the spool 80 may have a friction fit on the spool support sleeve 34 so as to provide the desired resistance.

25 In an alternative embodiment as illustrated in Figure 4, the indexing ring 60 may be disposed annularly around the side wall 88 of the spool 80. In this embodiment, the protrusion 66 is on a distal end of a biasing arm 67 extending from the backing plate 32 of the back casing 22. It will also be appreciated that the indexing ring 60 may be applied to the side wall 90 of the
30 spool 80 wherein the protrusion 66 extends from the front plate 42 of the front casing 40. In addition it will be appreciated that the indexing ring 60 may be applied to the spool 80 while the protrusion 66 extends from the portion of the casing corresponding to the location of the indexing ring.

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Turning now to Figures 5 and 6, an alternative resistive device is illustrated utilizing friction. The friction resistive device comprises friction pads 70 applied to the front and back plates 42 and 32 of the casing at location adjacent to the sides of the spool 80. In embodiments where the spool does not have sides, the friction pads may be disposed adjacent to side edges 81 and 83 of the central cylinder 82. As illustrated in Figure 6, in embodiments where the spool includes side walls 88 and 90, the friction pads may be disposed adjacent to the side walls 88 and 90. It will also be appreciated that the friction pads may be secured to the side walls or the side edges of the spool 80. The friction pads 70 will have a thickness sufficient to frictionally engage the spool therebetween when the front and back casings 40 and 22 are engaged with each other. The friction pads will also have a sufficient thickness and coefficient of friction to provide an sufficient amount of friction to the spool 80 to resist the free unwinding of the PTFE tape 14 therefrom while permitting the spool 80 to turn under the operation of the user to apply the PTFE tape to a article as discussed above.

With reference to Figure 9, the casing 20 may be selectively openable so as to facilitate replacement of the spool 80 of PTFE tape 14 therein. The front casing 40 may include a turn latch 92 extending therefrom for engagement with a corresponding cam 94 extending from the back casing 22. The turn latch 92 may be disengaged from the cam 94 to permit the front and back casings 40 and 22 to be removed from each other. It will also be appreciated that other types of couplings between the front and back casings 40 and 22 may also be used, such as, for example, tabs and threaded couplings. In such embodiments, it will be appreciated that that the finger sleeve 50 will be supported entirely by the back casing 22 as illustrated in Figure 5. In such embodiments, the finger sleeve 50 may include an end flange 51 adapted to surround the end edge 39 of the spool support sleeve 34. It will also be appreciated that the front casing 40 may also include an outer support sleeve 48 extending from the inner edge 45 of the front plate 42 to the backing plate 32 so as to provide additional support to the front plate 42. In such

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embodiments the indexing ring **60** or protrusions may also be located on such outer support sleeve if the outer support sleeve **48** surrounds the spool support sleeve **34**.

5 In other embodiments, the casing **20** will be unopenable so as to be a disposable unit in which the spool **80** of PTFE tape is not to be refilled. In such embodiments, finger sleeve may be supported by both the front and back casings **40** and **22**. It will be appreciated that in such embodiments, the end flange **51** of the finger sleeve may bear against the front plate **42** as
10 illustrated in Figure 4.

Turning now to Figures **10** and **11**, alternative embodiments of the dispensing portion **24** are illustrated. As illustrated in Figure **10**, the dispensing portion may include a plurality of rollers **110** through which the PTFE tape **14** is
15 passes. It will be appreciated that although three rollers are illustrated, one, two or more than three may also be utilized. It will be appreciated that the rollers will provide additional resistance to the free unravelling of the PTFE tape **14** from the apparatus **10**. Optionally as illustrated in Figure **11**, the dispensing portion **24** may comprise first and second sides **120** and **122**
20 wherein the first side extends further along the path of travel of the PTFE tape **14** than the second side **122**. It will be appreciated that in such an embodiment, the extended length of the first side **120** will facilitate a user being able to grab the end of the PTFE tape **14** when the tape is torn off close to the dispensing portion **24**.

25 It will be appreciated that some embodiments of the present invention will be adapted to be able to receive existing PTFE tape rolls. It will also be appreciated that in other embodiments of the present invention, the PTFE tape roll may be manufactured as a combined article for disposal after use. In
30 such embodiments the exterior components of the apparatus may be permanently affixed to each other. In addition, the roll of PTFE tape for such embodiments may also include one or more part of the indexing or breaking mechanism as described above for use specifically with such a unitary article.

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It will also be appreciated that specific rolls of PTFE tape including such indexing or breaking mechanism may also be provided for use as a replaceable roll for a corresponding apparatus.

5 Although the present disclosure describes polytetrafluoroethylene tape, or PTFE, it will be appreciated that the apparatus and method will be useful in association with other types of adhesiveless tapes as well such as anti-seize tape including, by way of non-limiting example, other PTFE tapes including, PTFE tapes having nickel, copper or ceramics included therein as well as
10 ribbons.

While specific embodiments of the invention have been described and illustrated, such embodiments should be considered illustrative of the invention only and not as limiting the invention as construed in accordance
15 with the accompanying claims.

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What is claimed is:

1. A method for dispensing non-adhesive tape carried on a spool to an article, the spool having a spool bore therethrough, the method comprising:
 - 5 providing a casing having a casing bore therethrough, said casing resistively and rotatably supporting the spool around said casing bore;

supporting said casing on a support member located within said casing bore;

10 securing a free end of the tape to the article through a dispenser portion of said casing, and

rotating said spool within said casing as to unwind the non-adhesive
15 tape while said casing is moved around the article with said dispenser portion maintained in radial alignment with the article.
2. The method of claim 1 wherein said support comprises a finger of a user.
20
3. The method of claim 1 wherein said dispensing portion compressibly grips the non-adhesive tape.
4. The method of claim 1 wherein said casing rotates around said support
25 while said casing is moved around said article.
5. The method of claim 4 wherein said casing rotates on said support.
6. The method of claim 4 wherein said casing rotates on a bearing
30 secured to said support

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7. An apparatus for dispensing non-adhesive tape carried on a spool to an article, the spool having a spool bore therethrough, the apparatus comprising:

5 a casing having a casing bore therethrough, said casing bore being adapted to rotatably receive a support member therein;

a spool support for resistively and rotatably supporting the spool around said casing bore; and

10

a dispenser portion located in said casing for dispensing said non-adhesive tape therethrough.

8. The apparatus of claim 7 wherein said support member comprises a
15 finger of a user.

9. The apparatus of claim 7 wherein said casing includes a sleeve, said sleeve having said casing bore therein wherein said casing is rotatable about
20 said sleeve.

20

10. The apparatus of claim 9 wherein said sleeve and said casing include a bearing therebetween.

11. The apparatus of claim 9 wherein said sleeve has a central axis
25 wherein said casing is rotatable about said central axis.

25

12. The apparatus of claim 11 wherein said spool is rotatable about said central axis.

13. The apparatus of claim 9 wherein said sleeve is adapted to grip said
30 support member.

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14. The apparatus of claim 9 wherein said sleeve is adapted to slidably receive said support member.

5 15. The apparatus of claim 7 wherein said casing includes a hub, said hub being concentric with said spool.

10 16. The apparatus of claim 15 wherein said one of said spool or said casing includes a biased protrusion adapted to engage one of a plurality of corresponding notches in the other of said spool or said casing, said plurality of notches being oriented radially around said casing bore such that rotation of said spool within said casing will cause said protrusion to engage successive notches.

15 17. The apparatus of claim 16 wherein said notches are located on said hub, wherein said protrusion radially extends inwardly from said spool.

18. The apparatus of claim 16 wherein said spool includes a spool axis and sidewalls perpendicular thereto.

20 19. The apparatus of claim 18 wherein said notches are located on at least one inner surface of said casing adjacent to said spool wherein said protrusion extends from a corresponding sidewall to said at least one inner surface.

25 20. The apparatus of claim 18 wherein said notches are located on at least one side wall wherein said protrusion extends from a corresponding inner surface of said casing to said at least one sidewall.

30 21. The apparatus of claim 7 wherein said spool includes an inner cylinder.

22. The apparatus of claim 21 wherein said casing includes first and second sides wherein said inner cylinder is frictionally engaged by said first and second sides of said casing.

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23. The apparatus of claim 22 further comprising friction assisting pads between said inner cylinder and said first and second sides of said casing.

5 24. The apparatus of claim 21 wherein said spool includes side walls extending radially from said inner cylinder.

25. The apparatus of claim 25 wherein said casing includes first and second sides wherein said side walls are frictionally engaged by said first and
10 second sides of said casing.

26. The apparatus of claim 25 further comprising friction assisting pads between said side walls and said first and second sides of said casing.

15 27. The apparatus of claim 7 wherein said dispenser portion frictionally bears against said non-adhesive tape passing therethrough.

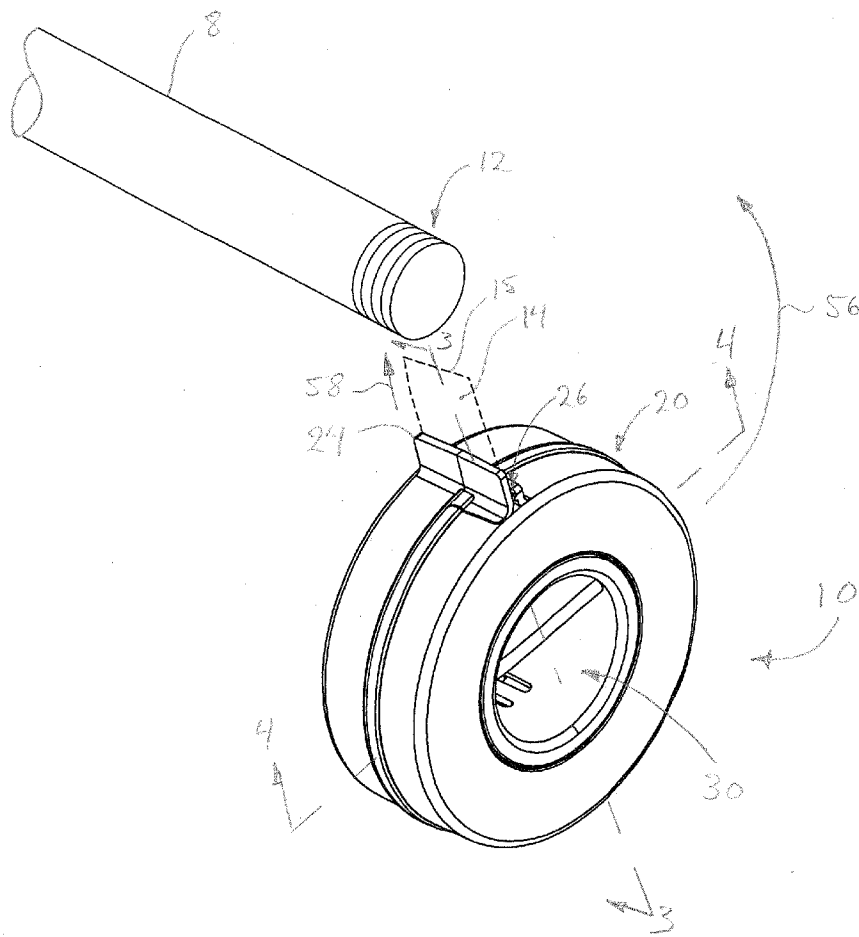


Fig. 1

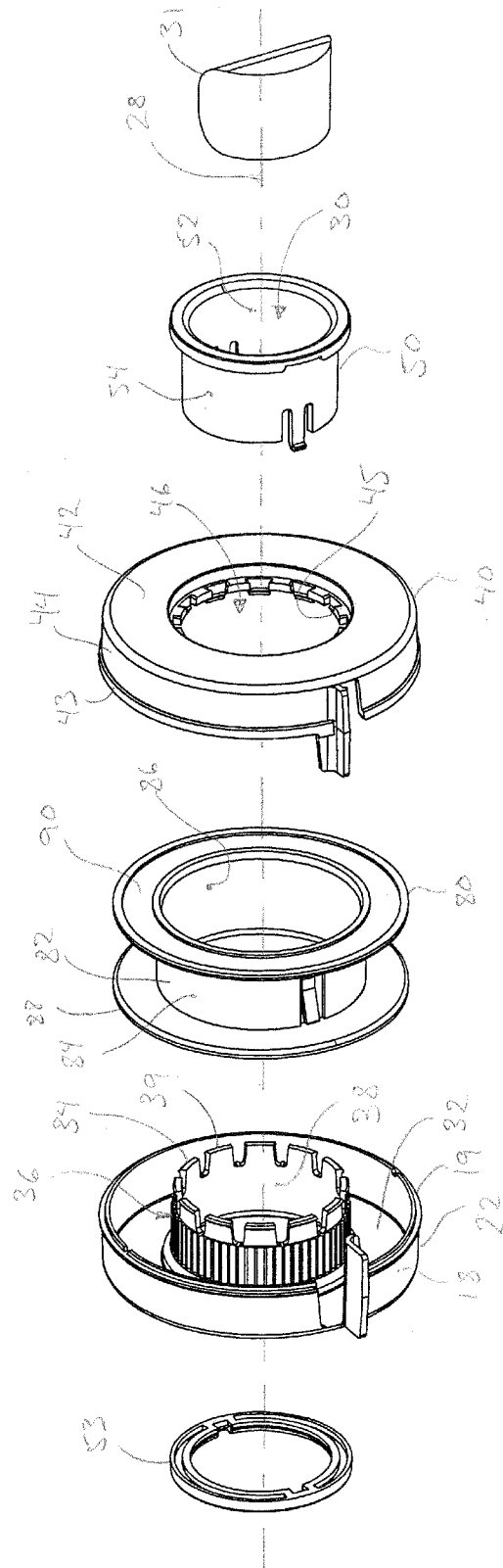


Fig. 2

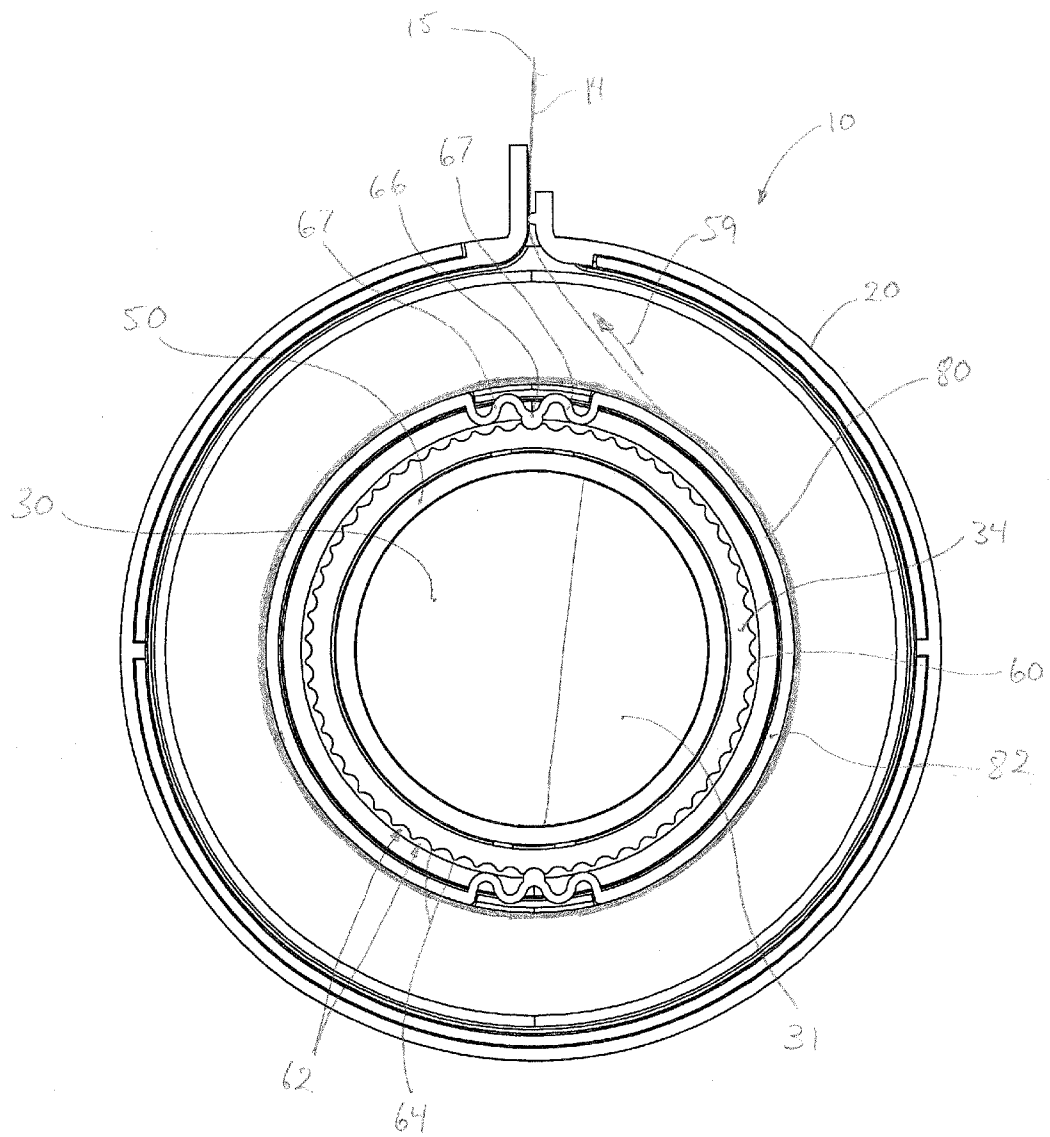


Fig. 3

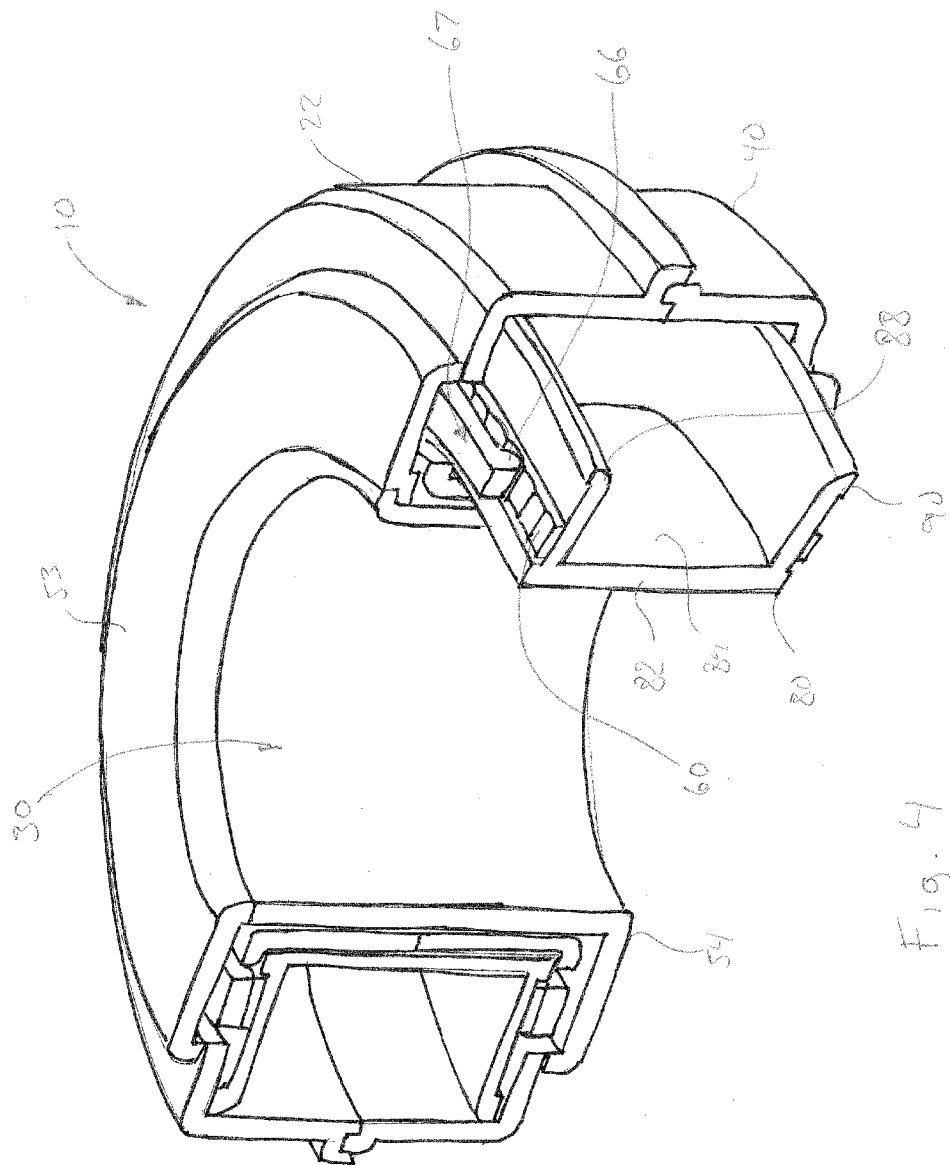


Fig. 4

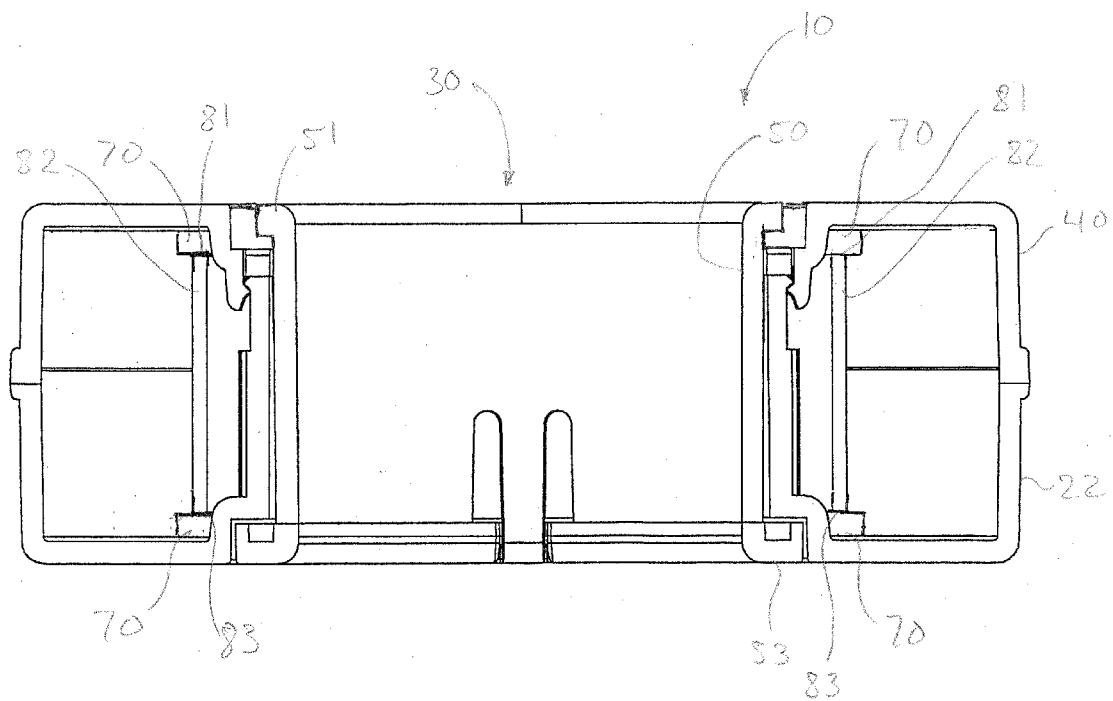


Fig. 5

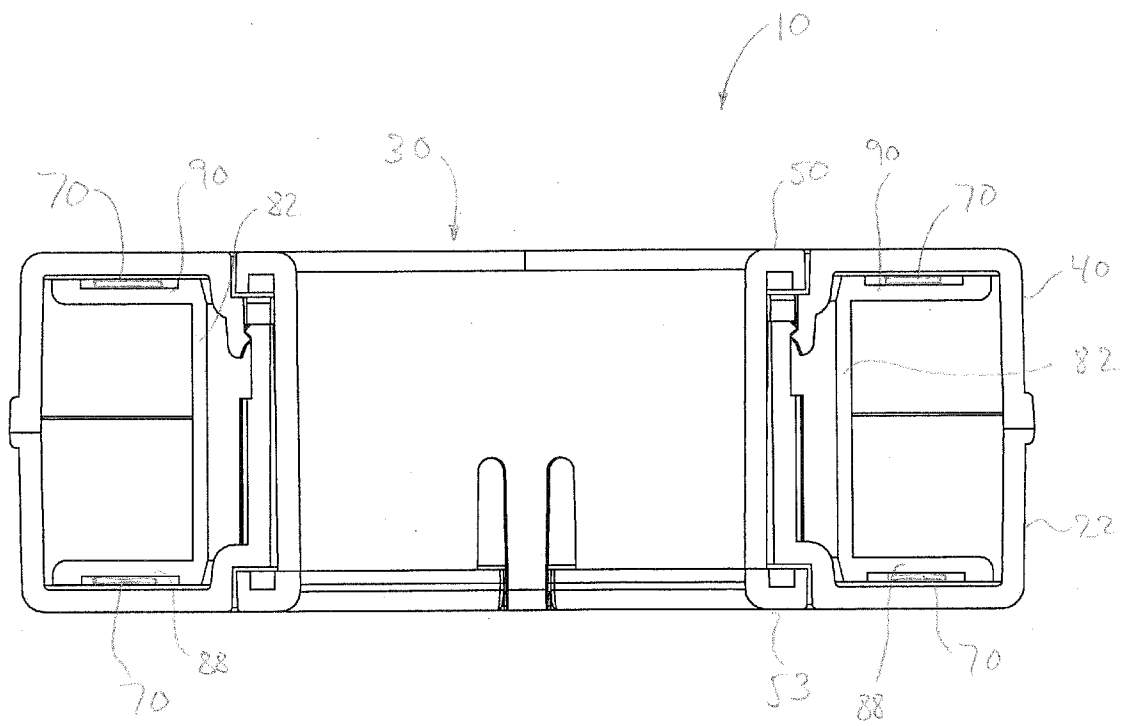


Fig. 6

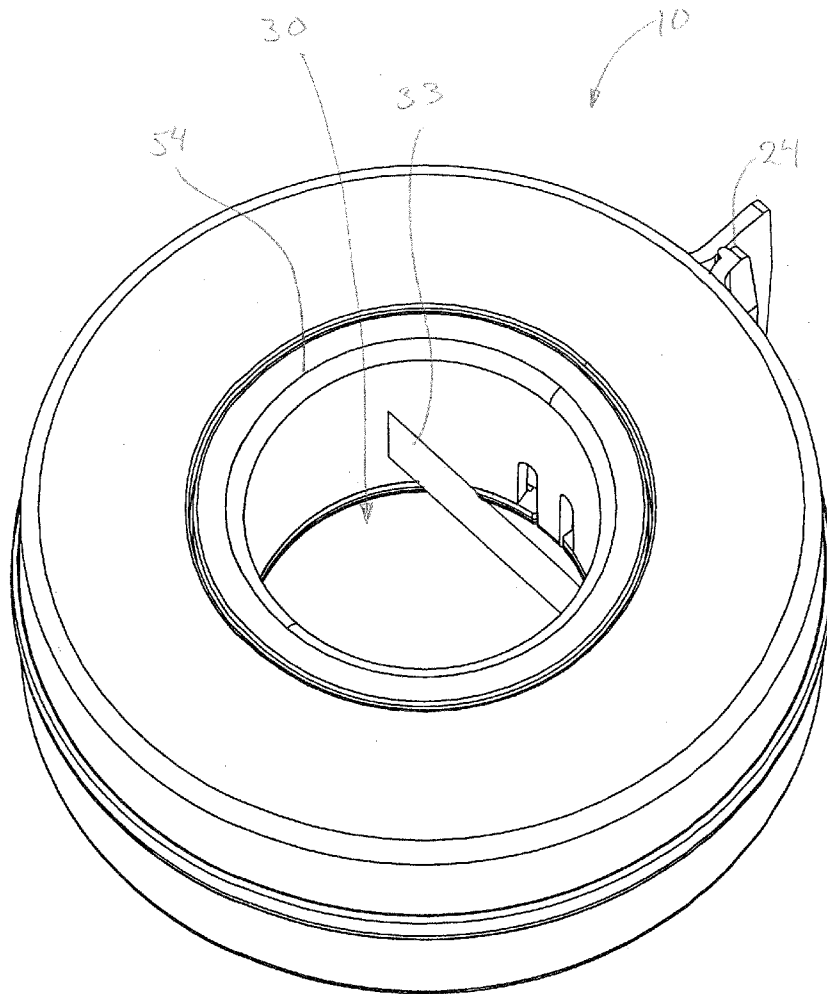


Fig. 7

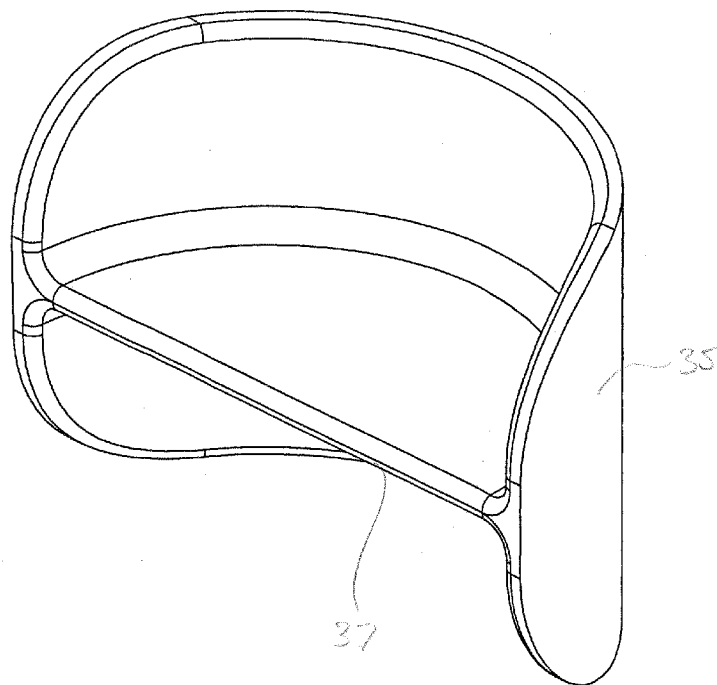


Fig. 8

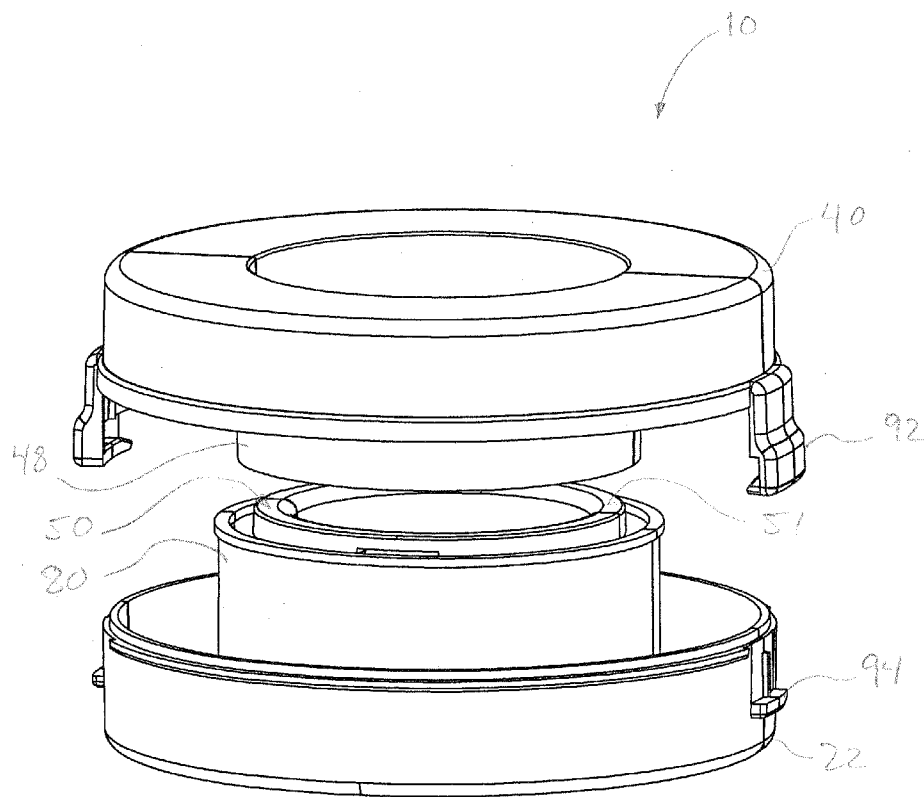


Fig. 9

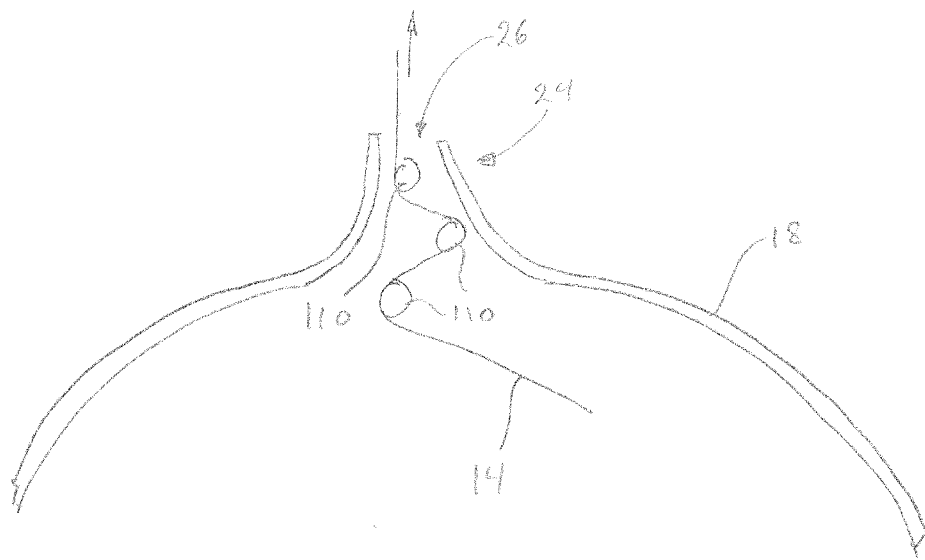


Fig 10

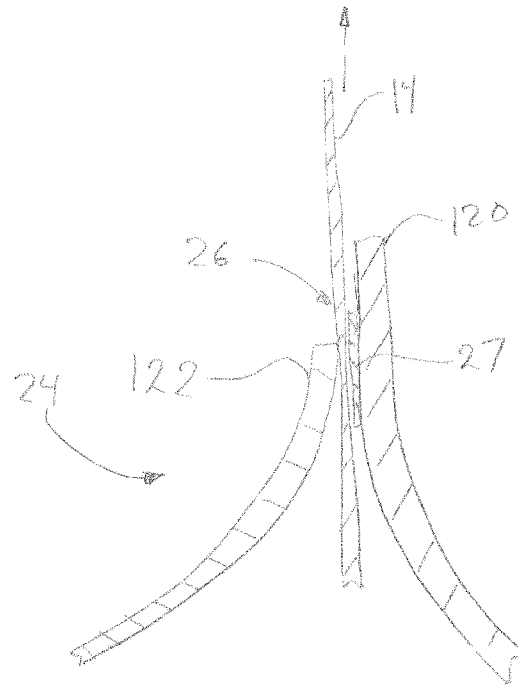


Fig. 11

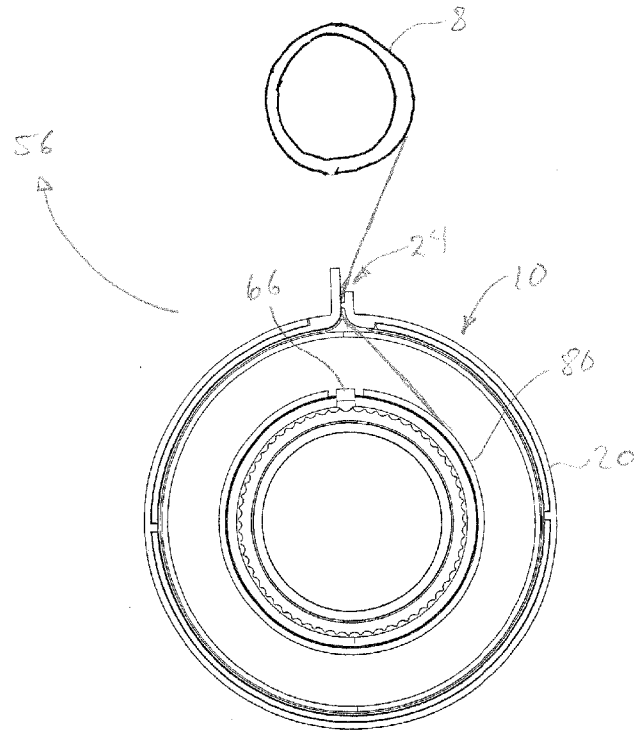


Fig. 12a

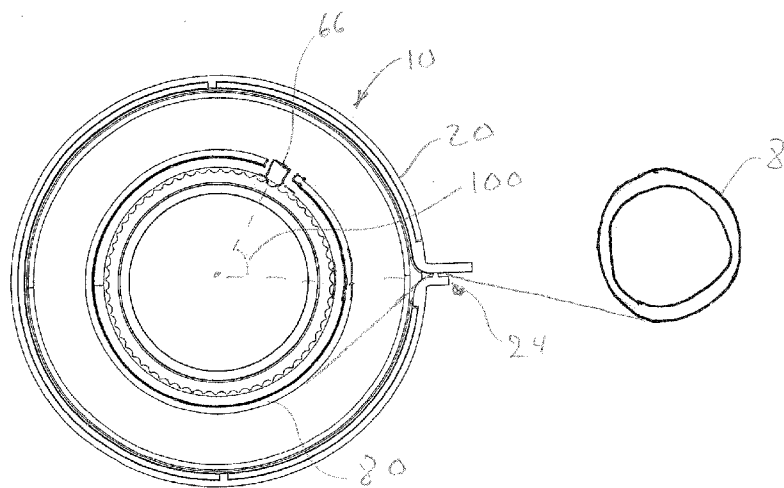


Fig. 12b

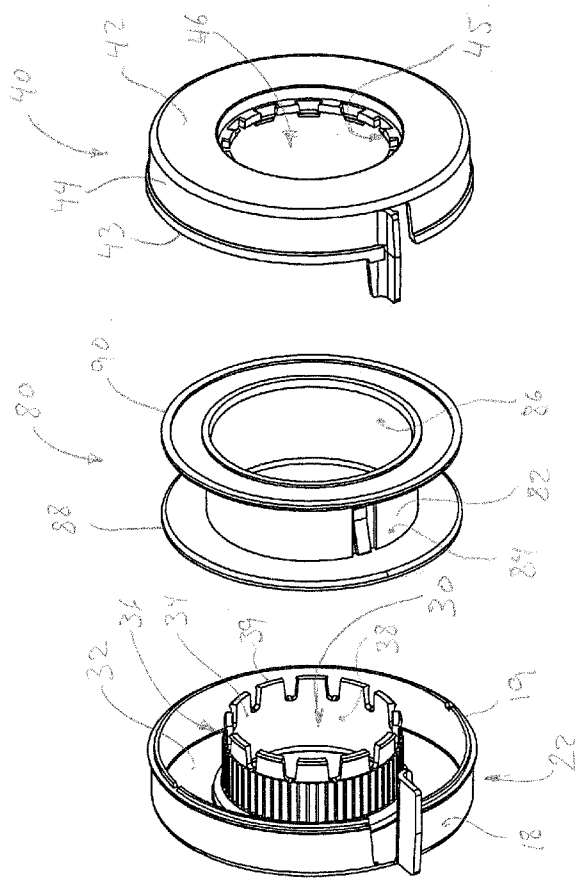


Fig. 13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2009/000436

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **B65H 16/00** (2006.01) , **B65H 23/18** (2006.01) , **B65H 37/00** (2006.01) , **F16L 55/00** (2006.01) , **F16L 55/18** (2006.01) , **F16L 15/08** (2006.01)

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: **B65H 16/00** (2006.01) , **B65H 23/18** (2006.01) , **B65H 37/00** (2006.01) , **F16L 55/00** (2006.01) , **F16L 55/18** (2006.01) , **F16L 15/08** (2006.01. CPC: **242/11,14,15,15.1,59.2, 71, 71.1, 71.2, 71.3; 219/33, 55, 57, 285/63, 64.**

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

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

Data Bases: Delphion, Intellect, West, WWW. **Search Terms:** tape, web, strip, belt, bandage, dispenser, package, roll, stud, boss, shaft, spindle, finger, springy, loose, resilient, non, adhesive, sticky, tacky, spool, bobbin, core.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6612474B1 (SHAH) 2 September 2003 (02-09-2003)	1-27
&	US 7175062 B2 (KITARU INNOVATIONS INC.) 13 February 2007 (13-02-2007)	1-27
Y	US 6543511 B2 (NIERMANN) 8 April 2003 (08-04-2003)	1-27
Y	US 5358113 A (MILES KIMBALL COMPANY) 25 October 1994 (25-10-1994)	1-27

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

13 May 2009 (13-05-2009)

Date of mailing of the international search report

10 July 2009 (10-07-2009)

Name and mailing address of the ISA/CA
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Facsimile No.: 001-819-953-2476

Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2009/000436

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US 6543511B2	08-04-2003	US 2002069974A1	13-06-2002
US 5358113A	25-10-1994	None	