



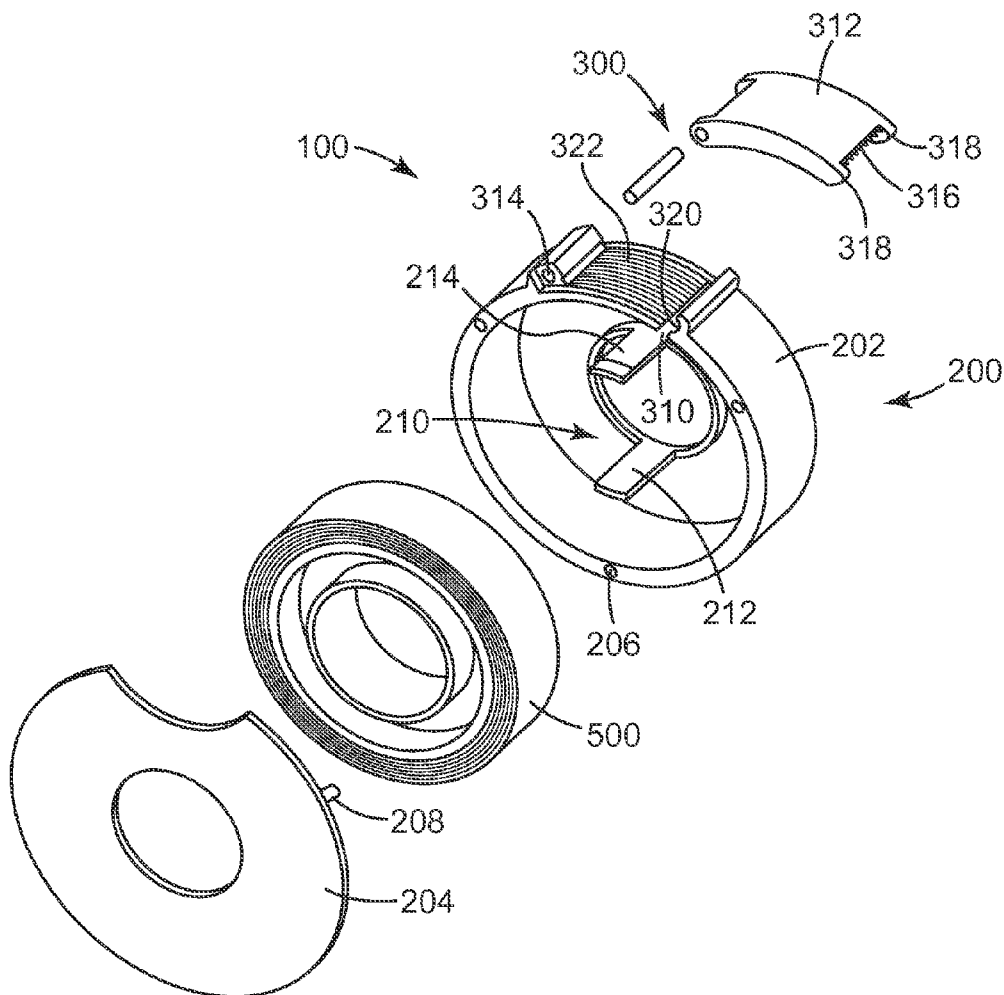
US 20130334273A1

(19) **United States**(12) **Patent Application Publication**
Hagglund et al.(10) **Pub. No.: US 2013/0334273 A1**(43) **Pub. Date: Dec. 19, 2013**(54) **TAPE DISPENSER****Publication Classification**(75) Inventors: **Joel K. Hagglund**, Lonsdale, MN (US);
Scott D. Pearson, Atlanta, GA (US)(51) **Int. Cl.**
B65H 35/00 (2006.01)(73) Assignee: **3M INNOVATIVE PROPERTIES**
COMPANY, St. Paul, MN (US)(52) **U.S. Cl.**
CPC **B65H 35/002** (2013.01)
USPC **225/77**(21) Appl. No.: **13/992,656**(22) PCT Filed: **Dec. 6, 2011**(86) PCT No.: **PCT/US11/63407**

§ 371 (c)(1),

(2), (4) Date: **Aug. 21, 2013****Related U.S. Application Data**(60) Provisional application No. 61/421,585, filed on Dec.
9, 2010.(57) **ABSTRACT**

A tape dispenser comprises a tape roll housing comprising a tape dispensing mechanism. The tape dispensing mechanism comprises a dispenser opening in the housing, a moving cover connected to the housing by a hinge, a cutting edge located at the outermost edge of the moving cover, a first landing surface defining the edge of the dispenser opening closest to the hinge, and a second landing surface located on the moving cover adjacent to the cutting edge. The landing surfaces are configured such the tape is formed into a cross-web concave shape between the first landing surface and the second landing surface.



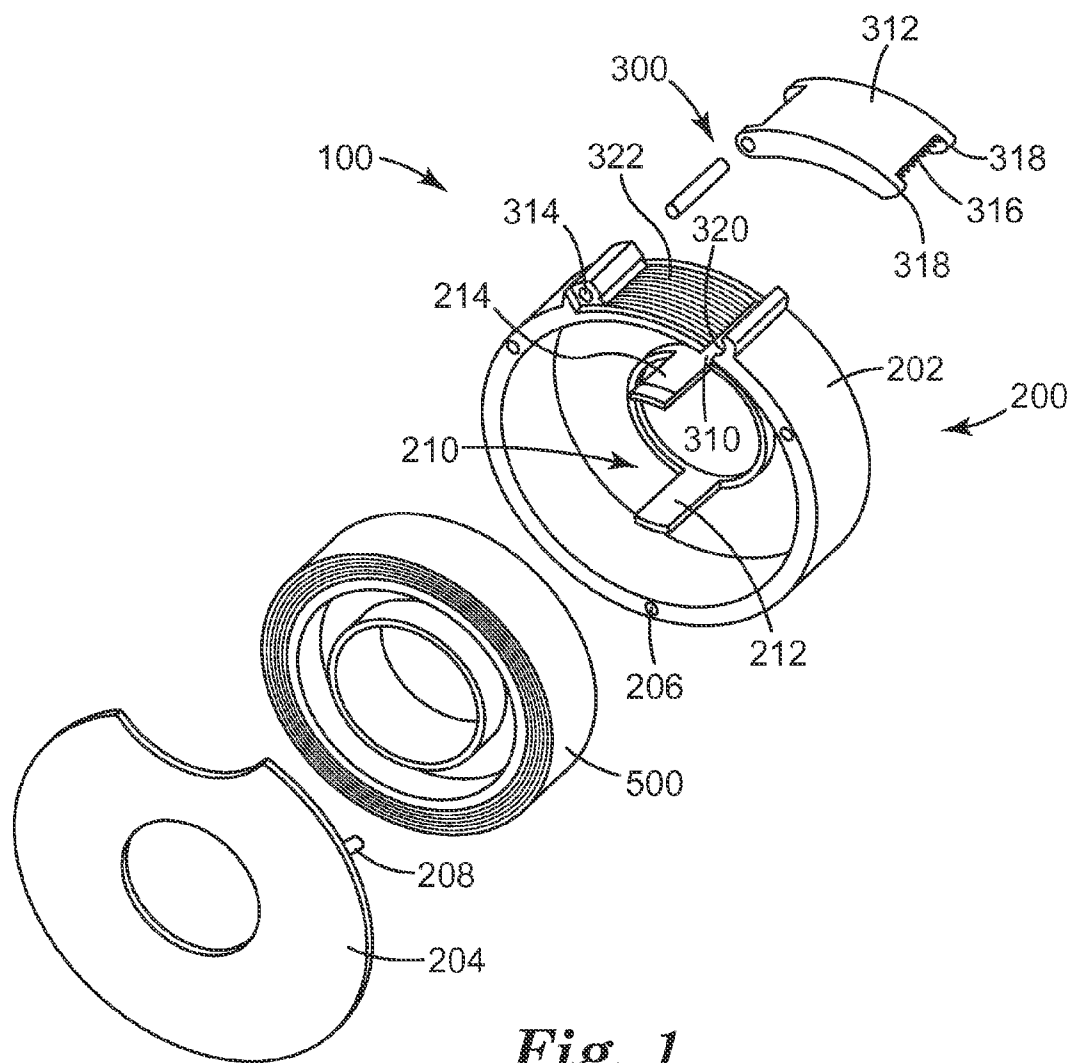


Fig. 1

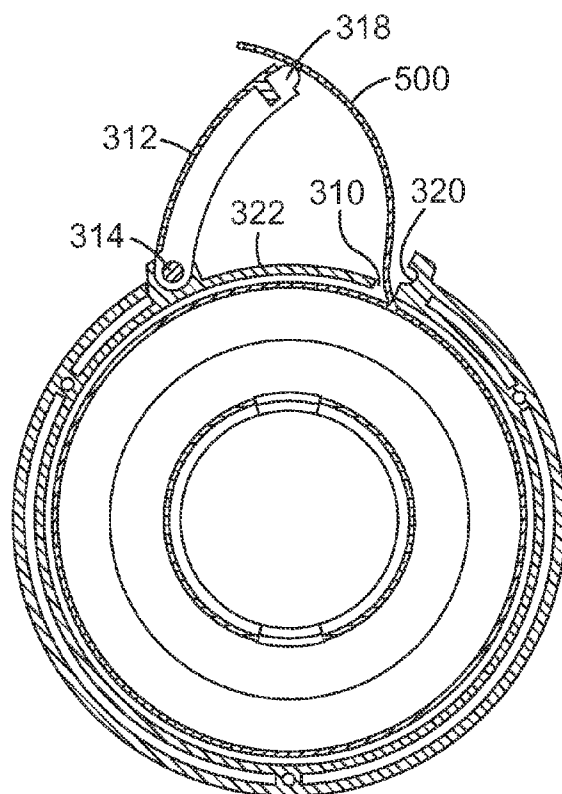


Fig. 2

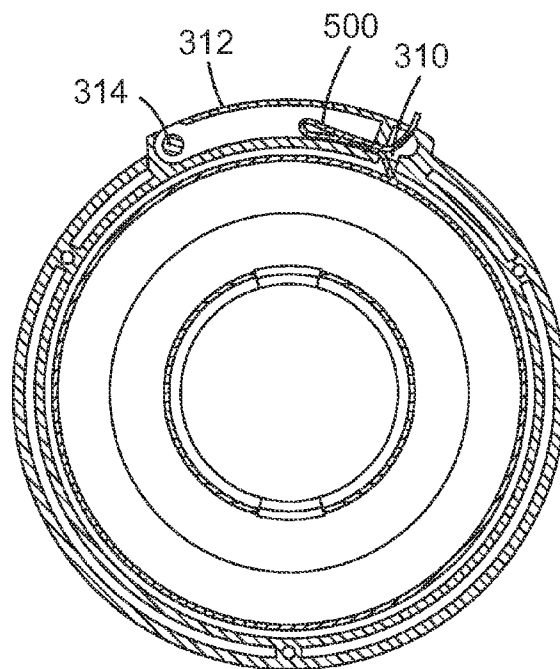


Fig. 3

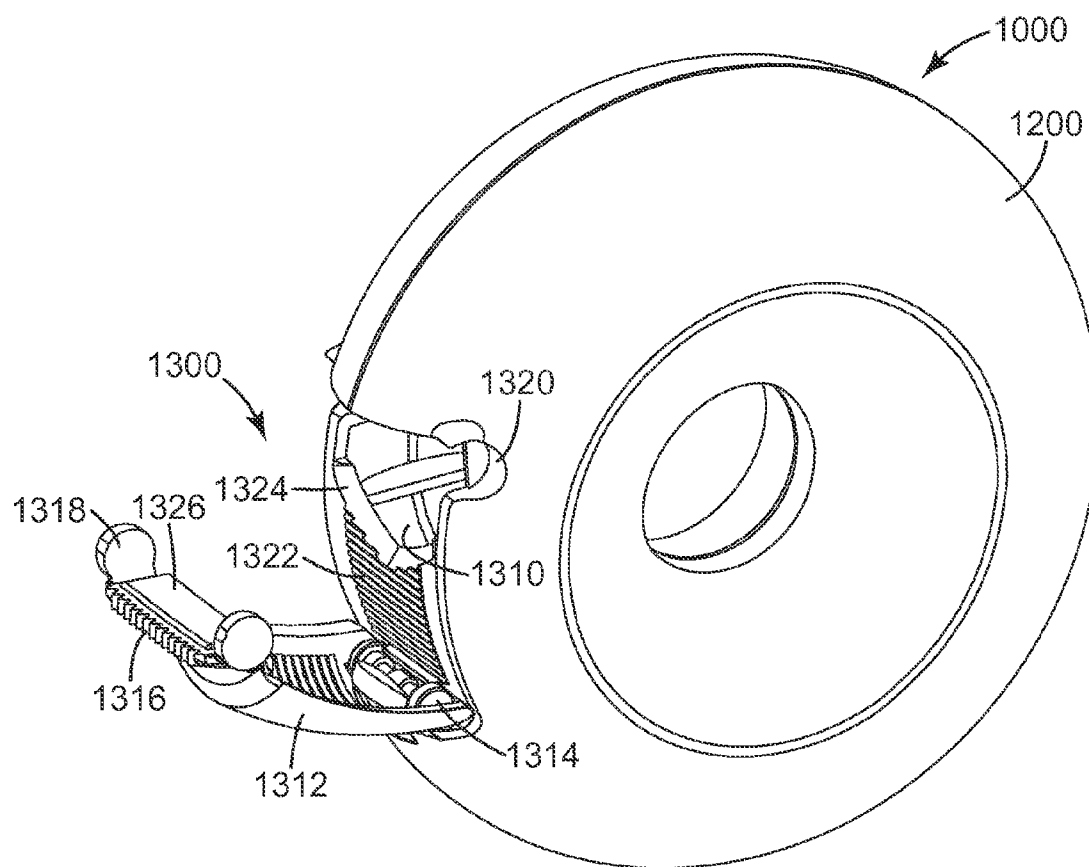


Fig. 4

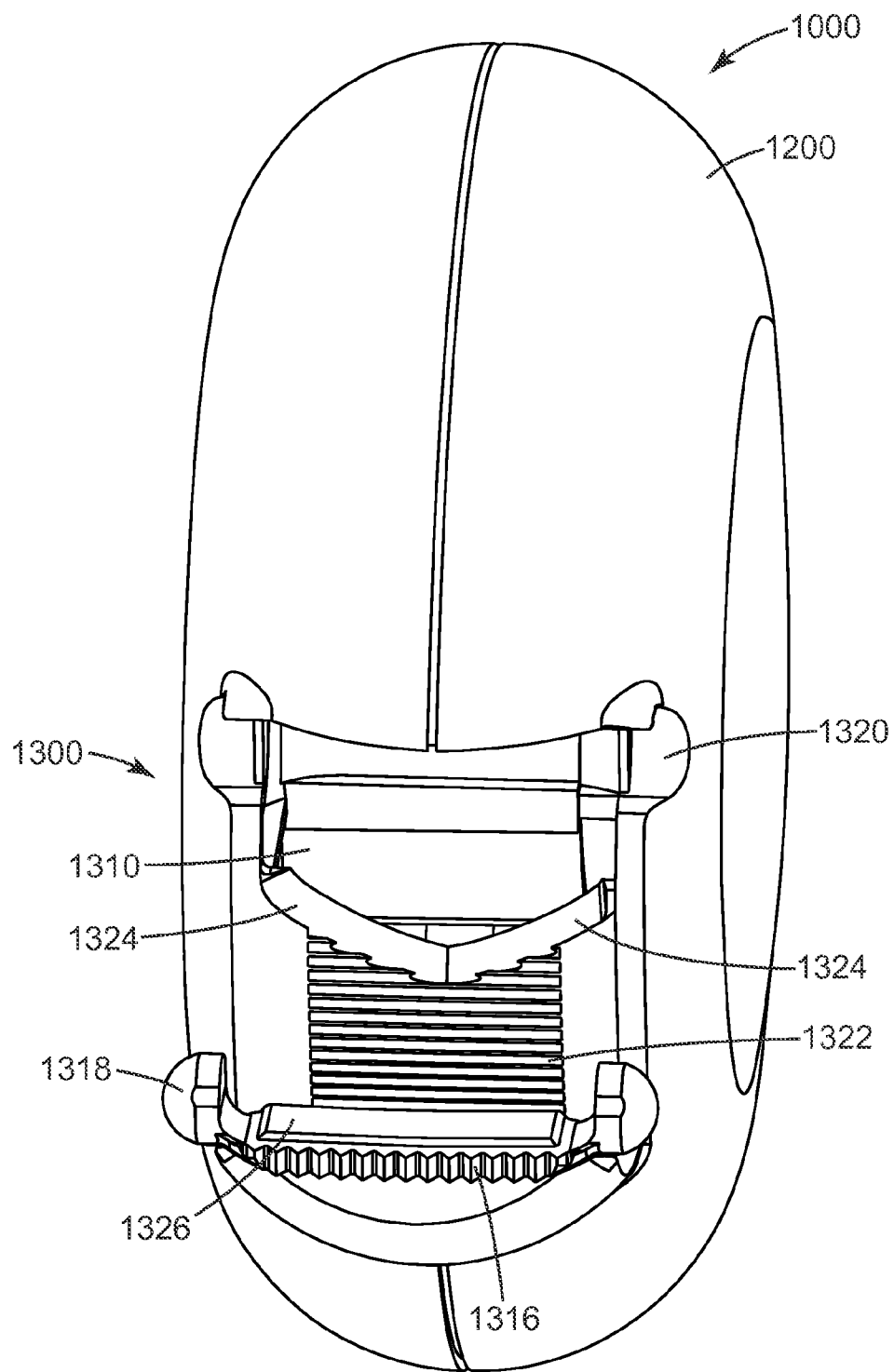


Fig. 5

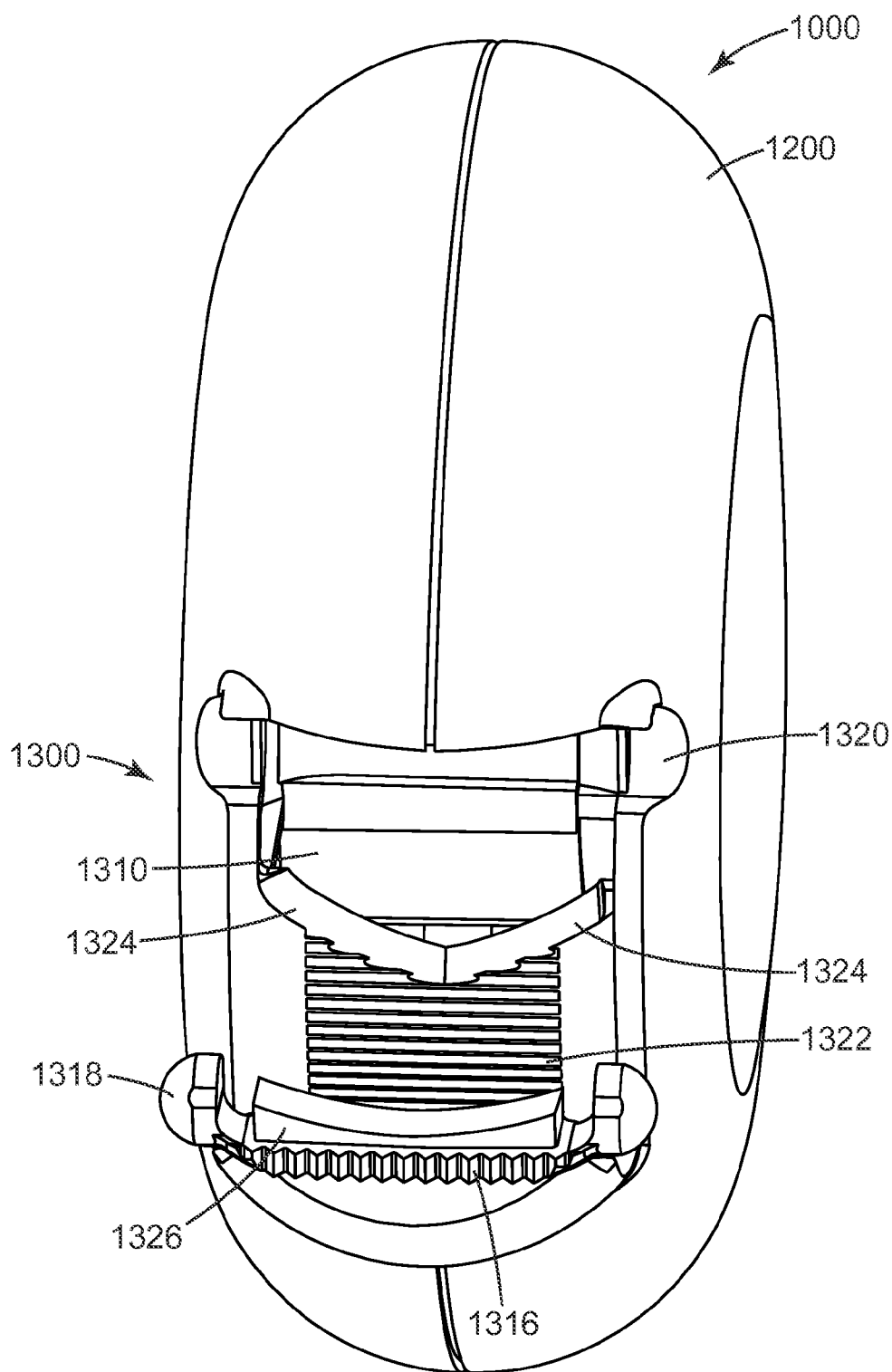


Fig. 6

Fig. 7

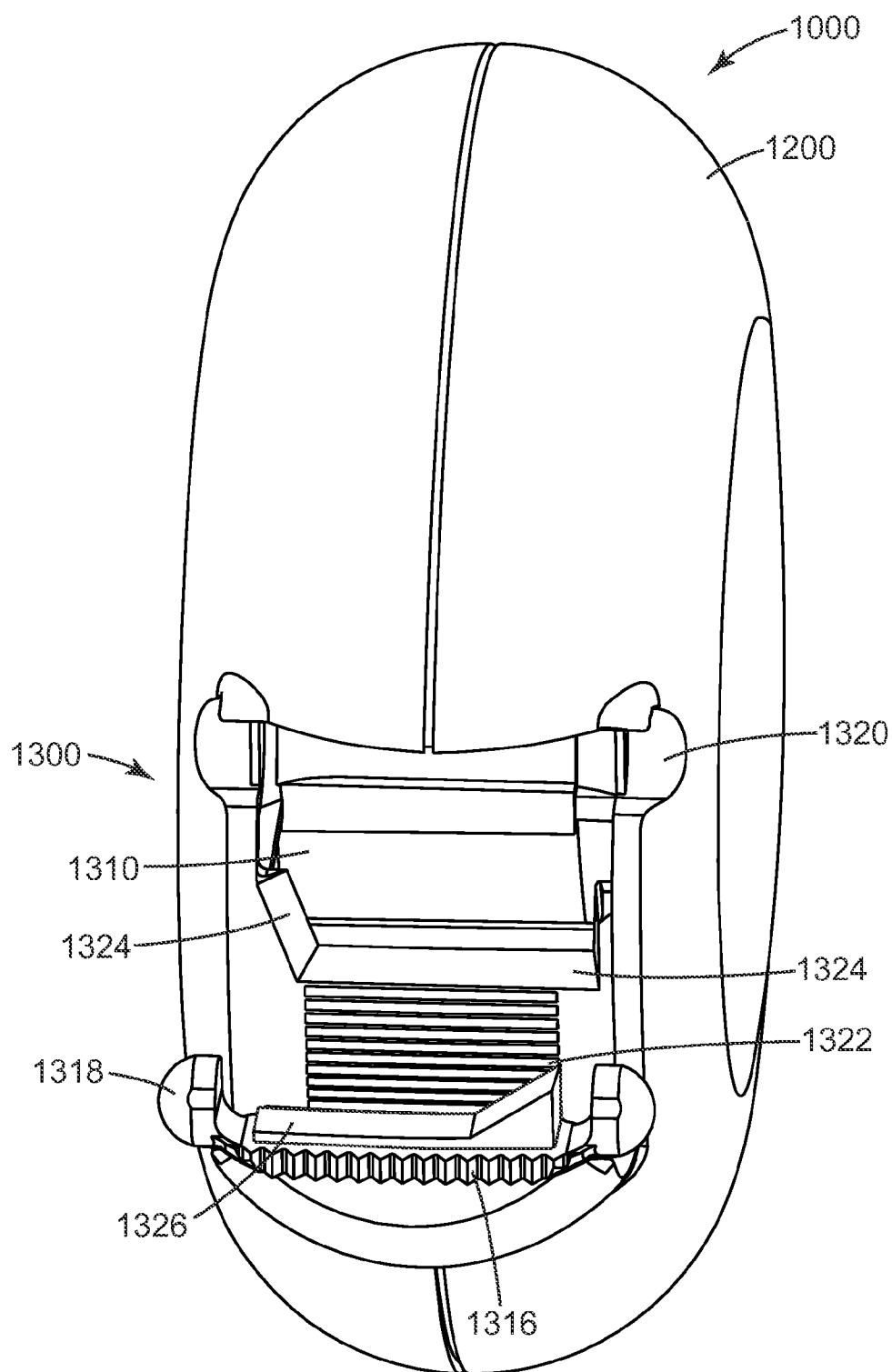


Fig. 8

TAPE DISPENSER

FIELD

[0001] This invention relates to tape dispensers having a cutting edge on a moving door.

BACKGROUND

[0002] Conventional tape dispensers often have a tape roll support for holding the core of a tape roll and a side wall extending from the tape roll support to a cutting blade. These types of dispensers leave one side of the roll of tape uncovered. The uncovered side can become contaminated with dirt, dust, or other debris.

[0003] Two-sided tape dispensers can be used to further contain the roll of tape. Conventional two-sided tape dispensers, such as the dispenser shown in U.S. Design Patent No. D510,951 (Carlson et al.), include a second side wall to cover the roll of tape. To open and gain access to the tape roll support, the side walls are typically twisted relative to one another.

[0004] Tape dispensers that are capable of entirely concealing the tape within the dispenser are disclosed in U.S. Pat. No. 7,641,087 (Chang) and U.S. Patent Application Pub. No. 2010/0200633 (Hsu et al.). These dispensers typically include a housing with a circular perimeter and a tape dispensing mechanism. The tape dispensing mechanism comprises an opening in the housing wall and a cutting edge. The cutting edge can be located on a moving door that is connected to the housing wall by a hinge. When the dispenser is not in use and the door is closed, the door covers the opening in the housing wall. When the door is open, tape can be pulled through the opening in the housing wall and then cut with the exposed cutting edge.

SUMMARY

[0005] We have recognized that tape dispensers that have a cutting edge disposed on a moving door such as the tape dispensers disclosed in Chang and Hsu et al. suffer from a drawback in that when a user is finished using the dispenser and closes the door cover, the tape often folds on itself adhesive-to-adhesive. This is not typically desirable because it creates an unusable section of tape. In order to avoid this folding problem, the user must press down on the non-adhesive side (i.e., the low adhesion backsize (LAB) side) of the tape to ensure that the tape folds on itself LAB-to-LAB instead of adhesive-to-adhesive. It would be desirable to have the tape automatically fold on itself LAB-to-LAB when the user closes the door so that the user does not have to take these additional steps.

[0006] In view of the foregoing, we recognize that there is a need in tape dispensers having a moving door for improvement such that the tape does not fold on itself adhesive-to-adhesive.

[0007] Briefly, in one aspect the present invention provides a tape dispenser comprising a tape roll housing comprising a tape dispensing mechanism comprising

[0008] a dispenser opening in the housing through which tape is pulled out,

[0009] a moving cover connected to the housing by a hinge,

[0010] a cutting edge located at the outermost edge of the moving cover,

[0011] a first landing surface defining the edge of the dispenser opening closest to the hinge, and

[0012] a second landing surface located on the moving cover adjacent to the cutting edge;

[0013] The first landing surface and the second landing surface are configured such that when at least a portion of the tape is adhered to the first landing surface and at least a portion of the tape is adhered to the second landing surface, the tape is formed into a cross-web concave shape between the first landing surface and the second landing surface.

[0014] It has been found that when the tape in a dispenser having a moving door is formed into a cross-web concave shape or is twisted, it will resist down-web folding in the concave direction (i.e., it will resist folding upon itself adhesive-to-adhesive). Thus, because the tape dispensers of the invention are configured such that the tape forms a cross-web concave shape, the tape dispensers of the invention meet the need in the art for tape dispensers having a moving door that do not fold tape back on itself.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is an exploded perspective view of an embodiment of a tape dispenser of the invention.

[0016] FIG. 2 is a sectional view of the tape dispenser of FIG. 1 with the moving cover open.

[0017] FIG. 3 is a sectional view of the tape dispenser of FIG. 1 with the moving cover closed.

[0018] FIG. 4 is a perspective view of an embodiment of a tape dispenser of the invention.

[0019] FIG. 5 is another perspective view of the tape dispenser of FIG. 4.

[0020] FIG. 6 is a perspective view of another embodiment of a tape dispenser of the invention.

[0021] FIG. 7 is a perspective view of an embodiment of a tape dispenser of the invention.

[0022] FIG. 8 is a perspective view of an embodiment of a tape dispenser of the invention.

DETAILED DESCRIPTION

[0023] FIG. 1 is an exploded perspective view of exemplary tape dispenser 100 for dispensing a roll of tape 500. Tape dispenser 100 comprises tape roll housing 200, which includes base 202 and cover plate 204, and tape dispensing mechanism 300. In this embodiment, tape roll housing 200 is circular to follow the contour of circular roll of tape 500 contained within. However, the shape of tape roll housing 200 can be other shapes, sizes or configurations. In this embodiment, base 202 has a plurality of connection openings or holes 206 on its edge that engage with connecting pegs 208 on cover plate 204 to connect cover plate 204 to tape roll housing 200. Base 202 may optionally include a tape core support. Tape core support 210 engages and supports the core of tape roll 500. As shown in FIG. 1, tape core support 210 includes first interlock 212 and second interlock 214 that extend from base 202 into tape roll housing 200. First interlock 212 and second interlock 214 can slightly flex to allow tape roll 500 to pass over them, but the ends of the interlocks stop tape roll 500 from being released from them. In other embodiments, the tape support could be a circular projection extending from base 202 into tape roll housing 200. Regardless of its exact configuration, the tape core support aids in restraining tape roll 500 while in tape roll housing 200.

[0024] Tape dispenser 100 includes tape dispensing mechanism 300. Tape dispensing mechanism 300 comprises a dispenser opening 310 in base 202 of tape roll housing 200,

moving cover **312** connected to base **202** by hinge **314**, and cutting edge **316** located at the outermost edge of moving cover **312**. In this embodiment, also included is section **322** of the circular wall of base **220**, which has a patterned outer surface. Adjacent to an end of section **322**, dispenser opening **310** (shown as a slit in this embodiment) is provided, through which tape **500** can be pulled out of base **202**. Moving cover **312** can be shaped correspondingly to section **322** so that moving cover **312** can be fitted over the patterned surface of section **322**. Moving cover **312** has locking protrusions **318** that engage with notch **320** to keep moving cover **312** in a locked, closed position. Moving cover **312** is connected to base **202** by hinge **314**, which allows for pivoting movement of moving cover **312** from an open position as shown in FIG. 2 to a closed position as shown in FIG. 3. As such, moving cover **312** can be flipped up to reveal or closed to cover the patterned surface of section **322**. On its inner surface, moving cover **312** may have a similar or the same patterned surface as the patterned surface of section **322** in order to interface with the patterned surface of section **322** when moving cover **312** is closed. Cutting edge **316** is located at the outermost edge (opposite of the hinge) of moving cover **312**. Cutting edge **316** may be integrally formed with moving cover **312** or it may be a separate blade that is installed in moving cover **312**.

[0025] The tape dispensing mechanism also includes two landing surfaces. A landing surface is a surface that the tape will stick to prior to cutting the tape with the cutting edge. As shown in FIGS. 4-8, exemplary tape dispenser **1000** comprises first landing surface **1324** located at the edge of dispenser opening **1310** closest to hinge **1314** (i.e., first landing surface **1324** defines the “bottom” edge of dispenser opening **1310**). Second landing surface **1326** is located on moving cover **1312** adjacent to cutting edge **1316**. When tape is pulled through dispenser opening **1310** to the desired length, the user engages the surface against first landing surface **1324** and second landing surface **1326** to stop the dispensing, and then the user pulls the tape against cutting edge **1316**.

[0026] First landing surface **1324** and second landing surface **1326** are configured such that when at least a portion of the tape is adhered to first landing surface **1324** and at least a portion of the tape is adhered to second landing surface **1326**, the tape is formed into a cross-web concave shape between the first landing surface and the second landing surface. It has been found that when the tape is formed into a cross-web concave shape (i.e., when it is cupped from side to side along the length of tape to be folded when the moving cover is closed), it will resist down-web folding in the concave direction. The landing surfaces do not have to make continuous contact with the tape. However, if the tape is allowed to dispense in a planar arrangement (for example, when the first landing surface and the second landing surface are planar), it will frequently fold on itself adhesive-to-adhesive.

[0027] Forming the tape into a cross-web concave shape between the first landing surface and the second landing surface can be accomplished with various configurations of the first and second landing surfaces. For example, as shown in FIGS. 4 and 5, first landing surface **1324** can be concavely curved in the cross-web direction while second landing surface **1326** is planar. Alternatively, first landing surface **1324** can have more of a “V” shaped notch than a curve. In some embodiments, as shown in FIG. 6, second landing surface **1326** is also concavely curved in the cross-web direction. Alternatively, second landing surface **1326** can have more of a “V” shaped notch than a curve.

[0028] In still other embodiments, as shown in FIG. 7, one half of first landing surface **1324** can be curved (while the other half of the first landing surface is planar) and the opposite half of second landing surface **1326** can be curved (while the other half of the second landing surface is planar).

[0029] In yet another embodiment, as shown in FIG. 8, one half of the first landing surface **1324** can be sloped (while the other half of the first landing surface is planar) and the opposite half of the second landing surface **1326** can be sloped (while the other half of the second landing surface is planar).

[0030] The curvature of the landing surfaces can vary. For example, it may be circular or elliptical. One way of describing the curvature is with a “rho” value. Computer aided design (CAD) systems typically have a conic curve function. The shape of a conic curve can be defined by its rho value. For example, rho of 0.5 gives a parabola, and greater or lesser than 0.5 gives hyperbolas or ellipses respectively.

[0031] In one embodiment of the tape dispenser of the invention, the first landing surface has an elliptical shape with a rho value of about 0.42.

[0032] In one embodiment of the tape dispenser of the invention, the second landing surface has a circular shape with a 7 inch radius.

[0033] The curvature of the second landing surface can be very slight. In some embodiments, the curvature of the second landing may not be readily noticeable to the naked eye.

[0034] As will become apparent to those skilled in the art, numerous other landing configuration are suitable for the tape dispensers of the invention as long as the first landing surface and the second landing surface are configured such that when at least a portion of the tape is adhered to first landing surface and at least a portion of the tape is adhered to second landing surface, the tape is formed into a cross-web concave shape between the first landing surface and the second landing surface.

[0035] The improved tape dispensing mechanism described above can be used in various tape dispensers including, but not limited to, tape dispensers such as those described in U.S. Pat. No. 7,641,087 (Chang) and U.S. Patent Application Pub. No. 2010/0200633 (Hsu et al.), which are incorporated herein by reference in their entirety. Various modifications and alterations to this invention will become apparent to those skilled in the art without departing from the scope and spirit of this invention. It should be understood that this invention is not intended to be unduly limited by the illustrative embodiments set forth herein and that such embodiments are presented by way of example only with the scope of the invention intended to be limited only by the claims set forth herein as follows.

1. A tape dispenser comprising a tape roll housing comprising a tape dispensing mechanism comprising
 a dispenser opening in the housing through which tape is pulled out,
 a moving cover connected to the housing by a hinge,
 a cutting edge located at the outermost edge of the moving cover,
 a first landing surface defining the edge of the dispenser opening closest to the hinge, and
 a second landing surface located on the moving cover adjacent to the cutting edge;
 wherein the first landing surface and the second landing surface are configured such that when at least a portion of the tape is adhered to the first landing surface and at least a portion of the tape is adhered to the second land-

ing surface, the tape is formed into a cross-web concave shape between the first landing surface and the second landing surface.

2. The tape dispenser of claim 1 wherein the first landing surface is concavely curved in the cross-web direction.

3. The tape dispenser of claim 1 wherein the first landing is V-shaped.

4. The tape dispenser of any of claim 1 wherein the second landing surface is concavely curved in the cross-web direction.

5. The tape dispenser of any of claim 1 wherein the second landing surface is V-shaped.

6. The tape dispenser of claim 1 wherein one half of the first landing surface is curved and its other half is planar.

7. The tape dispenser of claim 6 wherein the half of the second landing surface opposite the curved half of the first landing surface is curved and its other half is planar.

8. The tape dispenser of claim 1 wherein one half of the first landing surface comprises a slope and its other half is planar.

9. The tape dispenser of claim 8 wherein the half of the second landing surface opposite the sloped half of the first landing surface comprises a slope and its other half is planar.

10. The tape dispenser of claim 1 wherein the tape roll housing is circular.

11. The tape dispenser of claim 10 wherein the circular wall of the tape roll housing comprises a section having a patterned outer surface.

12. The tape dispenser of claim 11 wherein the inner surface of the moving cover has a similar or the same pattern as the section having a patterned outer surface on the circular wall of the tape roll housing.

13. The tape dispenser of claim 1 wherein the moving cover has locking protrusions that engage with notches on the tape roll housing.

14. The tape dispenser of claim 1 wherein the cutting edge is integrally formed with the moving cover.

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