US 20180215570A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2018/0215570 A1**

(43) **Pub. Date: Aug. 2, 2018**

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(54) **APPLICATION DEVICE FOR LOW COST COVERING ON SIR WIRE, TETHER WIRES, AND ANY ROUND ROD SHAPED COMPONENT**

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(21) Appl. No.: **15/419,597**

(22) Filed: **Jan. 30, 2017**

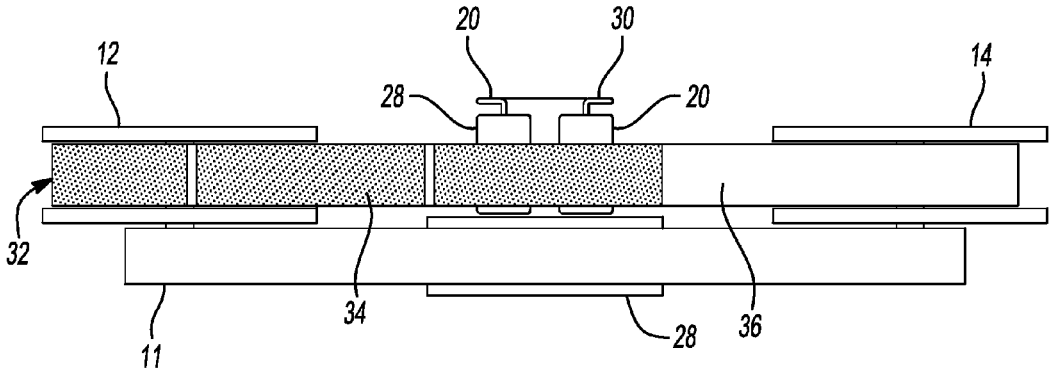
Publication Classification

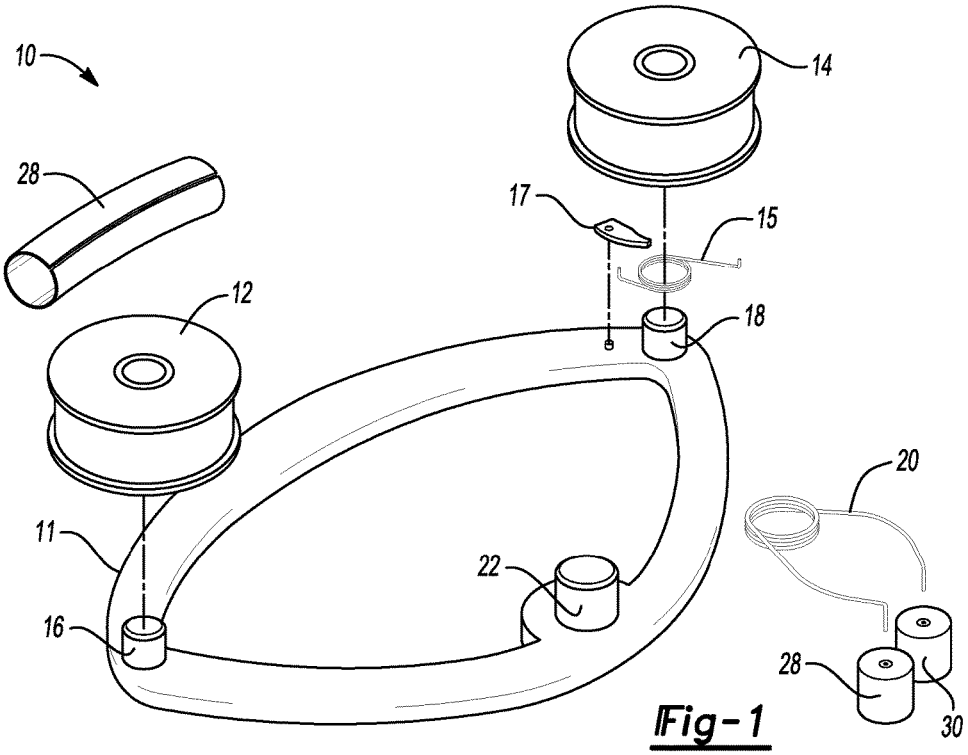
(51) **Int. Cl.**
B65H 35/00 (2006.01)

(52) **U.S. Cl.**
CPC ***B65H 35/0033*** (2013.01)

(57) **ABSTRACT**

A tape dispenser is disclosed. The tape dispenser may include a pair of spools that are configured to carry tape and a spring disposed between the spools. The spring is preferably arranged to form a claw having two distal ends biased towards each other. The distal ends may each include a roller rotatably attached thereto. The spring may be configured to open responsive to a force on the roller resulting from a shaft coming between the rollers such that the rollers rotate to travel around the shaft to apply the tape.

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14
28
17
15
12
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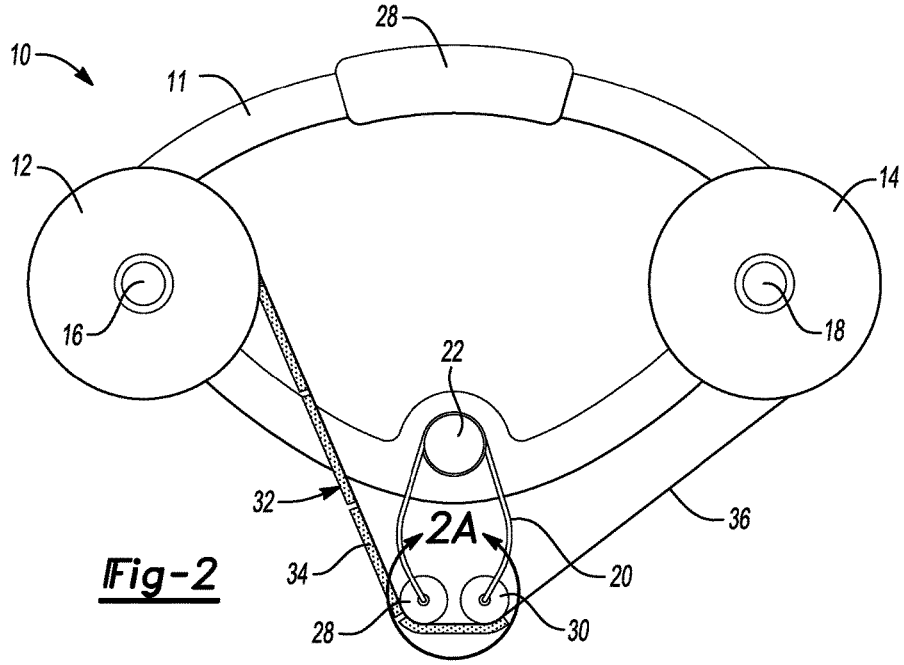
11
22
16
28
30

Fig-1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10
11
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16
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22
32
2A
36
34
20
28
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Fig-2

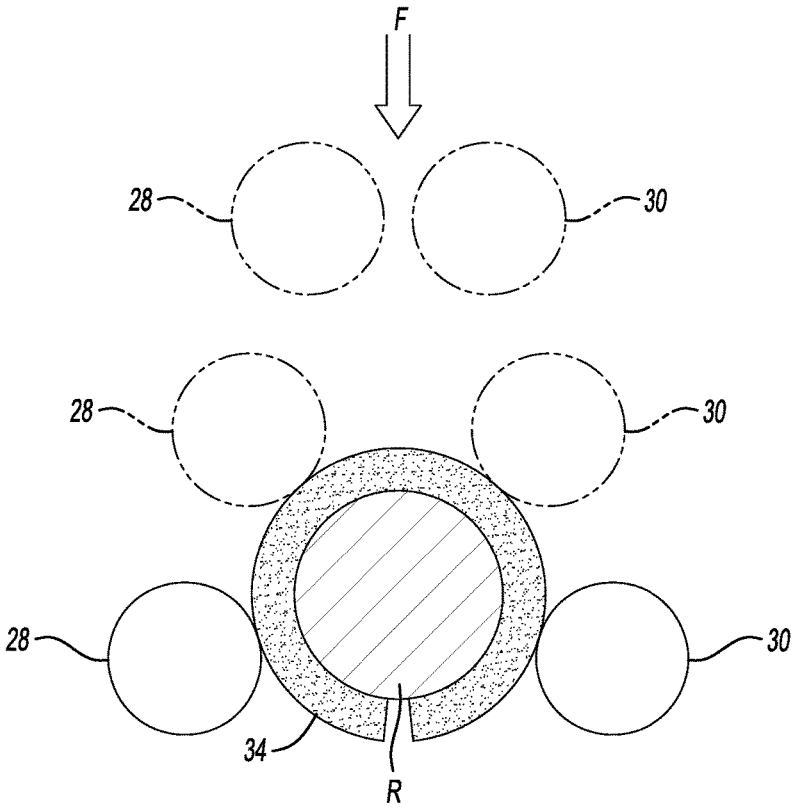

Fig-2A

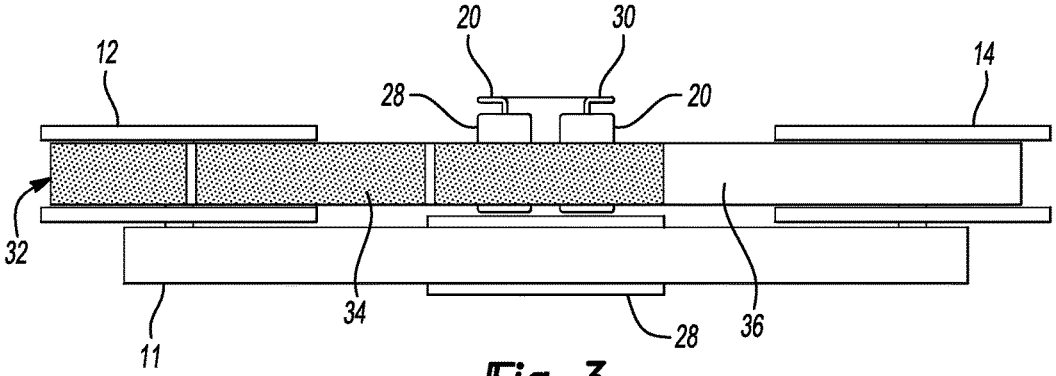

Fig-3

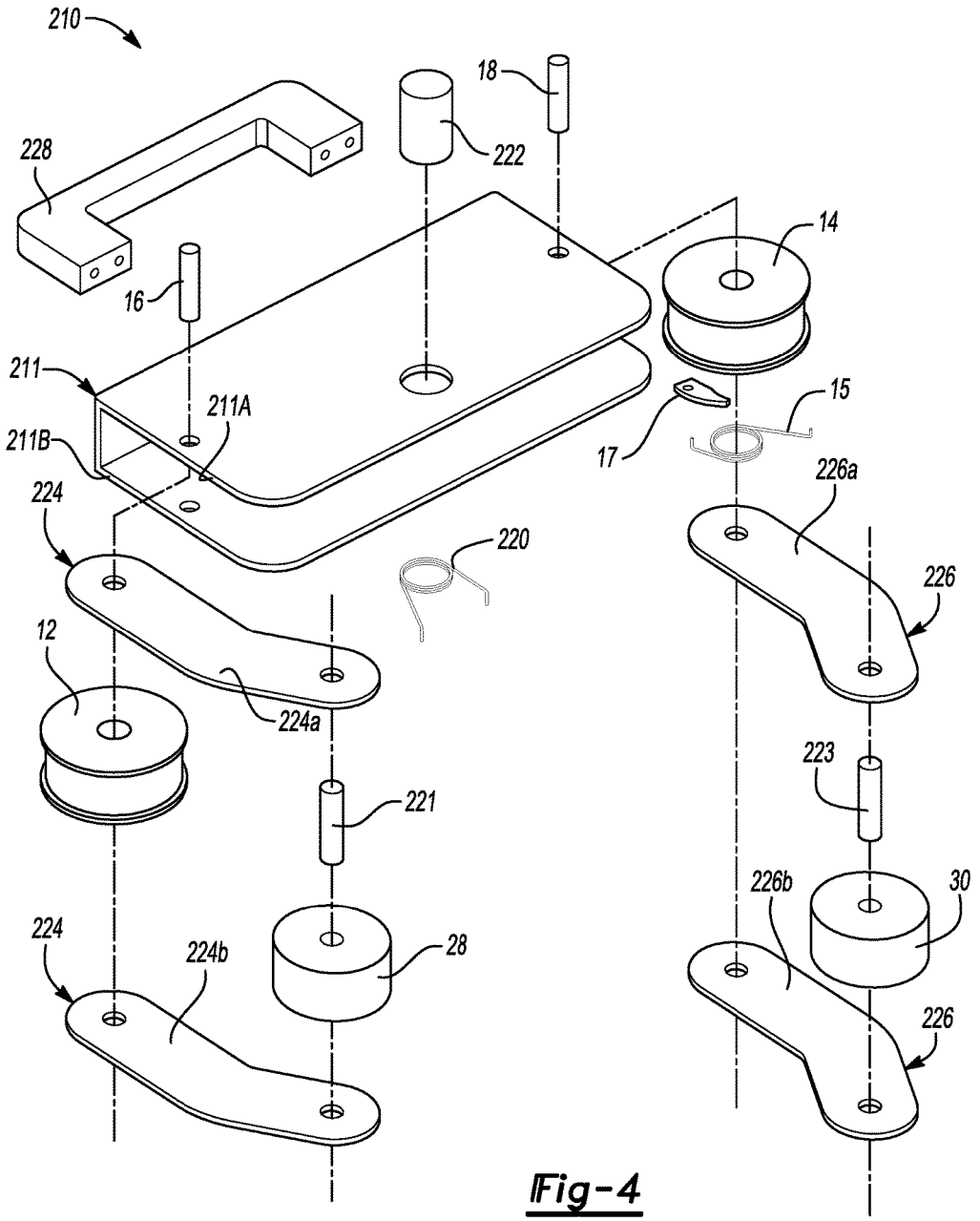
210
18
222
228
14
16
211
211A
15
211B
17
226a
224
220
226
12
224a
223
221
226b
30
224
224b
28
226

Fig-4

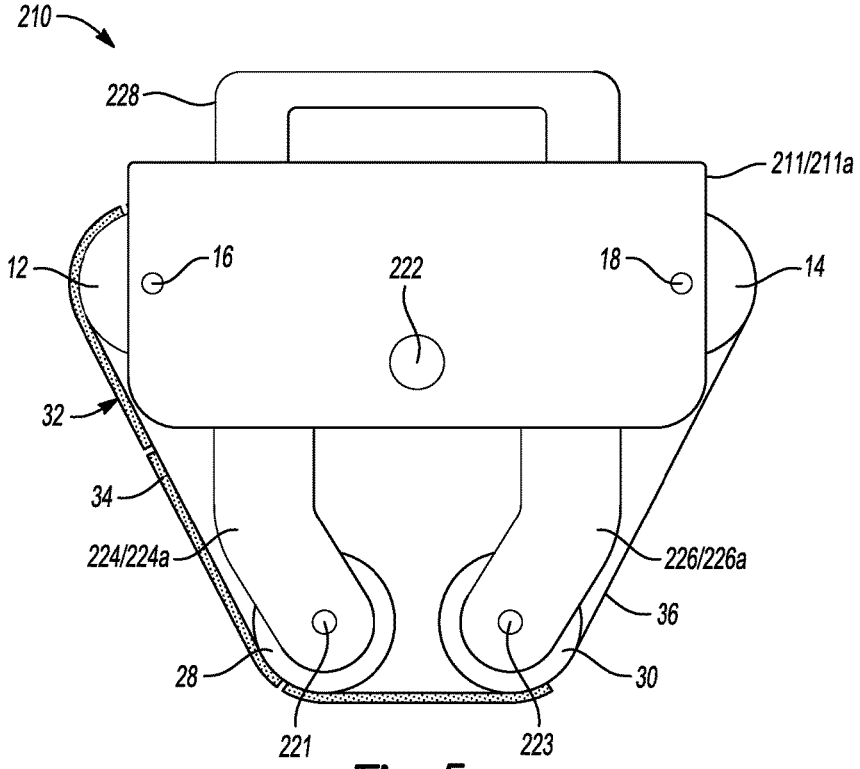
210
228
211/211a
12
16
222
18
14
32
34
224/224a
226/226a
36
28
30
221
223

Fig-5

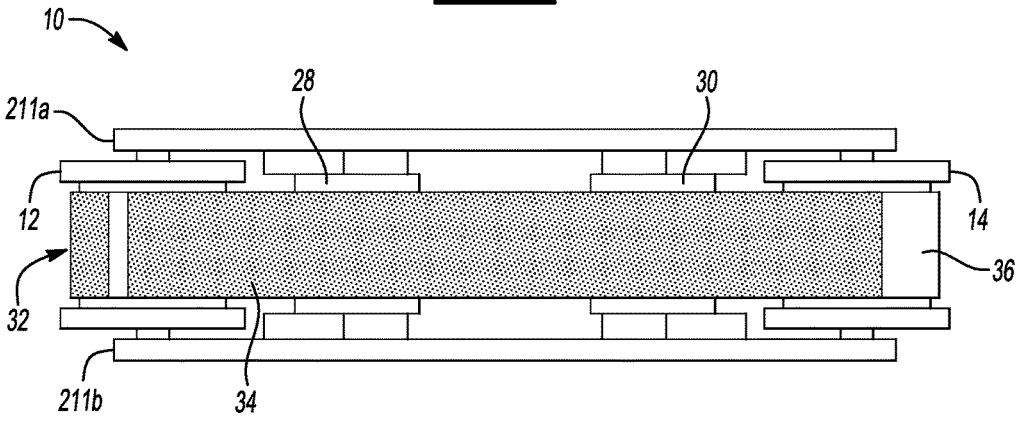
10
28
30
211a
12
14
36
32
211b
34

Fig-6

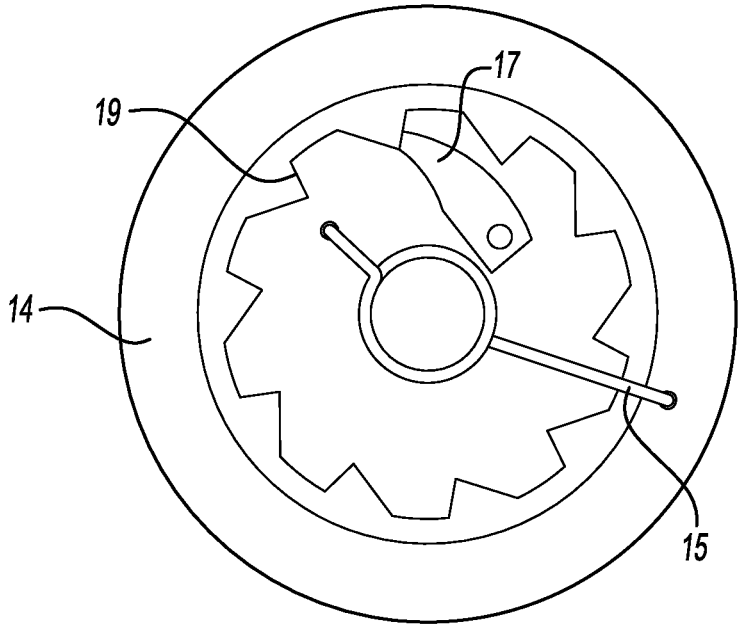

Fig-7

APPLICATION DEVICE FOR LOW COST COVERING ON SIR WIRE, TETHER WIRES, AND ANY ROUND ROD SHAPED COMPONENT

TECHNICAL FIELD

[0001] This disclosure relates to masking, concealing, or painting rounded components of a vehicle seat structure.

BACKGROUND

[0002] Automotive vehicle seat structures often include elongated rounded metal parts disposed underneath the foam and trim of a vehicle seat or external to the seat structure. Supplemental inflation restraint (SIR) members, lower anchors and tethers for children (LATCH) restraint systems, and lumbar support systems generally include various rounded spring wire or metal round stock. Generally, the metal portion of the seat structure is painted or coated with a rust prohibitive coating. It is advantageous to mask or conceal certain components after they have been assembled to the seat structure to prevent unwanted contaminants, e.g. paint, coating, or weld splatter from coming into contact with a specified rounded surface.

SUMMARY

[0003] According to one embodiment of this disclosure, a tape dispenser is disclosed. The tape dispenser may include a pair of spools that are configured to carry tape and a spring disposed between the spools. The spring is preferably arranged to form a claw having two distal ends biased towards each other. The distal ends may each include a roller rotatably attached thereto. The spring may be configured to open responsive to a force on the roller resulting from a shaft coming between the roller such that the rollers rotate to travel around the shaft to apply the tape.

[0004] According to another embodiment of this disclosure, a tape dispenser is disclosed. The tape dispenser preferably includes a body, a supply spool and a retracting spool disposed on the body. A claw is preferably formed by first and second arms that are each pivotally attached to the body between the spools. Preferably each of the arms include a roller that is pivotally attached thereto and configured to open responsive to a force on the rollers resulting from a shaft coming between the rollers such that the rollers rotate to travel around the shaft to apply the tape.

[0005] According to yet another embodiment of this disclosure, a tape applicator device is disclosed. The device preferably includes a supply pulley and a retracting pulley each attached to a planar body. The device may include a claw formed by first and second applicator arms each pivotally attached to a portion of the body that is disposed between the supply pulley and the retracting pulley and at least two rollers that are pivotally attached to a distal end of the first and second applicator arms. During operation, as the device moves toward a rounded surface, the rollers preferably move about the rounded surface and the supply pulley may be rotated to provide a piece perforated piece of tape. As the device is removed from the rounded surface, the retracting roller retracts the roll of tape such that a new piece of perforated tape is positioned across the rollers.

[0006] The devices as generally described above may each additionally be described by the following.

[0007] The pair of spools may include a supply spool and a retracting spool. During operation, a portion of a roll of tape may be fed from the supply spool.

[0008] The tape dispenser may further include a base, a spring and a pawl. Spring and the whole are preferably offered weakened coupled between the retracting spool and the body. The retracting spool may define an internal gear portion. Preferably, the spring, pawl and internal gear portion facilitates a ratcheting movement of the retracting spool.

[0009] The retracting roller may have an outer diameter that corresponds to a length of a piece of perforated tape so that as the tape is applied to a rounded surface, the retracting roller rotates and retracts the roll of tape so that an unapplied piece of tape is positioned across the two applicator rollers.

[0010] Each of the rollers may have an outer diameter wherein the outer diameter corresponds to a diameter of the shaft such that the piece tape covers a predetermined portion of the shaft.

[0011] The tape dispenser may also include a handle attached to the body and configured to allow a user to grasp the tape dispenser.

[0012] The roll of tape preferably includes a perforated tape section and a backing. The roll of tape is preferably stretched across the rollers between the supply spool and the retracting spool.

[0013] The body is preferably U-shaped having a top portion and bottom portion defining a space therebetween. The supply spool and the retracting spool may be disposed within the space.

[0014] The first and second arms preferably have a distal end and each include a top member and a bottom member wherein the rollers are disposed within the top member and bottom member of each arm.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. **1** is a perspective view of an applicator device according to the 1st embodiment of this disclosure.

[0016] FIG. **2** is a top view of the applicator device according to a 1st embodiment of this disclosure.

[0017] FIG. **2**-A is a progressive-view of the applicator device in operation.

[0018] FIG. **3** is a plan view of the applicator device according to the 1st embodiment of this disclosure.

[0019] FIG. **4** is a perspective view of an applicator device according to a 2nd embodiment of this disclosure.

[0020] FIG. **5** is a top view of the applicator device according to the 2nd embodiment of this disclosure.

[0021] FIG. **6** is a plan view of the applicator device according to the 2nd embodiment of this disclosure.

[0022] FIG. **7** is a bottom view of a retractor pulley according to one embodiment of this disclosure.

DETAILED DESCRIPTION

[0023] As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale; some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be

interpreted as limiting, but merely as a representative basis for teaching one skilled in the art to variously employ the present invention.

[0024] Vehicle seat structures often include elongated and rounded metal parts disposed underneath the foam and trim of the seat structure and for attaching various components to the parts may be external to the seat structure. Supplemental inflation restraint (SIR) members, the lower anchors and tethers for children (LATCH) restraint systems, and lumbar support systems generally include various rounded spring wire or metal round stock. Generally, the metal portion of the seat structure is painted or coated with a rust prohibitive mat. It is advantageous to mask or conceal certain components after they have been assembled to the seat structure but before the seat structure enters the paint process.

[0025] Concealing components so that they are not painted may be accomplished by applying a tape or other material with an adhesive backing. Applying tape to these components is often time and labor intensive. Moreover, consistent application of the tape in terms of quantity and location of the tape is dependent on the operator and difficult to control. Another challenge is applying the tape to a majority of the rounded surface, as opposed to only the side visible to the operator. The following disclosure aims at resolving the problems mentioned above.

[0026] Referring to FIGS. **1** and **2**, a perspective view and a top view of the applicator device **10** according to one embodiment of the disclosure is illustrated. The applicator device **10** includes two spools **12** and **14** and a body **11**. Although the body **11** shown in FIGS. **1** and **2** has a triangular shape, the body may have other shapes, e.g. rectangular or circular. The body is preferably made of a lightweight material such as plastic or aluminum. The material needed to have a sufficient strength to allow a user to apply a force to a rod, while applying the tape or coating. The two spools are referred to as a tape carrier **12** and a backing carrier or retracting pulley **14**.

[0027] The tape carrier **12** is pivotally connected to one of the corners of the body **11**. A backing carrier **14** is pivotally attached to the corner opposite of the tape carrier **12**. The tape carriers-**12** and the backing carrier **14** are connected to the body **11** by shafts **16** and **18**, respectively. The tape carrier **12** and backing carrier **14** are preferably made of a plastic material such as but not limited to nylon, delrin, or any other polymeric material. At least one spring **20** is mounted to a spring mount **22** which is disposed on the body **11** between the tape carrier **12** and the backing carrier **14**. A handle **28** is disposed on a portion of the body **11** located opposite of the applicator rollers **28** and **30**. The handle is configured to allow a user to grasp and operate the applicator device.

[0028] The spring **20** includes a first leg **24** and second leg **26** that outwardly extends from the body. Applicator rollers **28** and **30** are each attached to the first leg **24** and second leg **26**, respectively. The first leg **24** and second leg **26** are biased towards each other by the resistance of the spring to form a claw shaped feature. A roll of tape or other coating **32** is wound on the tape carrier **12** and extends therefrom across the applicator rollers **28** and **30** to the backing carrier **14**. The roll of tape or coating **32** includes perforated sections **34** attached to a backing strip **36**. An adhesive substance is disposed on a surface of the perforated tape section **34** that is attached to the backing carrier. The outwardly facing portion of the perforated sections, located on the side opposite of the side in contact with the rollers **28** and **30**, includes an adhesive substance that may be applied to a rounded surface that is to be taped.

[0029] Referring specifically to FIG. **1**, a spring **15** and pawl **17** are attached to the backing carrier **14** and the body **11**. As will be described in greater detail below, spring **15** and pawl **17** facilitate a ratcheting movement to retract the roll of tape or other coating **32**.

[0030] Referring to FIG. **2**-A, a detailed view of the applicator device in operation is illustrated. During operation, a force is applied along the directional arrow F towards the rod R or other rounded surface. The applicator rollers **28** and **30** are illustrated as adjacent to each other before the operation. As the applicator device **10** moves towards the round member R, the round member R comes between the applicator rollers **28** and **30**. In response to the rod coming between the rollers the backing carrier **14** rotates in a clockwise direction to create slack in the roll of tape **32**. To facilitate application of the perforated tape section **34**, the claw formed by the legs of the spring **20** are biased around the rod R. After the perforated tape section **34** is applied to the rod, the device is removed in a direction opposite of the directional arrow F. Upon the removal of the applicator device from the round member R, a portion of the baking strip **36** where the perforated section of tape **34** was located is stretched across the applicator rollers **28** and **30**. The backing carrier in conjunction with the spring and pawl is rotated in a counter-clockwise direction to retract the backing strip **36** and position the next perforated section of tape **34** across the rollers **28** and **30**. Preferably, the backing carrier retracts or rotates twice the amount in the counter-clockwise direction as compared to the clockwise direction. The rollers follow the outer peripheral portion or circumference of the rod R as the tape is applied to a majority of the surface of the rod R.

[0031] Referring to FIG. **3**, plan view of the tape applicator device is illustrated. The tape carrier **12** and the backing carrier **14** are attached to the top surface of the body **11**. However, in other embodiments, the tape carrier **12** and the backing carrier **14** may be pivotally mounted on the underside of the body **11**.

[0032] Referring to FIGS. **4** and **5**, an applicator device **210** according to a second embodiment according to this disclosure is illustrated. The applicator device **210** includes a rectangular U-shaped body to **211**. A tape carrier **12** and backing carrier to **14** which may be referred to as spools are disposed between a top member **211**A and a bottom member **211**B. The tape carrier **12** and backing carrier **14** are pivotally attached to the body **211** by shafts **16** and **18**. Applicator arms **224** and **226** are pivotally connected to the body to **211**, by shafts **16** and **18**. A spring **220** is disposed on the spring mount **222** and bias the applicator arms **224** and **226** together. The applicator arms **224** and **226** may be attached to the body at another point or points.

[0033] A handle **228** is disposed on the body located opposite the applicator arms **224** and **226**. The handle is configured to allow user to grasp the applicant device. The applicator arms each include applicator roller **28** and **30**, respectively. The roll of tape is wound on the tape carrier **12** and stretches across the applicator rollers **228** to **230** to the backing carrier to **14**. The roll of tape preferably includes perforated sections that have adhesive surface opposite of the applicator rollers **228** and **238** and are attached to the backing strip.

[0034] Referring to FIG. **6**, a plan view of the tape applicator device **210** according to a second embodiment of this disclosure is illustrated. The tape carrier to **211** backing carrier **214** are sandwiched between the top member **211***a* and the bottom member **211***b*.

[0035] Referring to FIG. **7**, the backing carrier according to the first or second embodiment of this disclosure, is illustrated. A pawl **17** and spring **15** are each cooperatively attached to the body **11**/**211** (FIGS. **1**-**2** and FIGS. **3**-**6**). The pawl **17** engages an internal gear **19** formed within the backing carrier **14**. As tension is applied to the roll of tape **32**, the backing carrier is rotated with sufficient force to overcome the pawl **17** and gear **19**. Tension is applied to the spring as the backing carrier is unwound. Once the applicator device is removed from the taped surface, the spring provides sufficient force to retract the backing carrier **14** and tape **32**. When the backing carrier retracts, a new piece of perforated tape **34** is indexed and placed across the rollers **28** and **30**.

[0036] While exemplary embodiments are described above, it is not intended that these embodiments describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention. Additionally, the features of various implementing embodiments may be combined to form further embodiments of the invention.

What is claimed is:

1. A tape dispenser comprising:

a pair of spools configured to carry tape; and

a spring disposed between the spools, and arranged to form a claw having two distal ends biased toward each other, each including a roller rotatably attached thereto, configured to open responsive to a force on the rollers resulting from a shaft coming between the rollers such that the rollers rotate to travel around the shaft to apply the tape.

2. The tape dispenser of claim **1**, wherein the pair of spools include a supply spool and a retracting spool and wherein during operation, a portion of a roll of tape is fed from the supply spool.

3. The tape dispenser of claim **2**, wherein during operation, a portion of the roll of tape is retracted by the retracting spool.

4. The tape dispenser of claim **2** further comprising a base, a spring and a pawl, wherein the spring and pawl are operatively coupled between the retracting spool, wherein the retracting spool defines an internal gear portion, and wherein the spring, pawl and internal gear portion cooperate to facilitate a ratcheting mechanism.

5. The tape dispenser of claim **4**, wherein the retracting spool is in a locked position before the shaft comes between the rollers and wherein the spring provides sufficient force to rotate the retracting spool after a piece of tape is applied and the rollers come together.

6. The tape dispenser of claim **5** further comprising a handle attached to the base and configured to allow a user to grasp the tape dispenser.

7. The tape dispenser of claim **5**, wherein the retracting spool has an outer diameter that corresponds to a length of a piece of perforated tape so that as the tape is applied to a rounded surface, the retracting spool rotates and retracts the roll of tape so that an unapplied piece of tape is positioned across the rollers.

8. The tape dispenser of claim **1**, wherein each of the rollers has an outer diameter and wherein the outer diameter corresponds to a diameter of the shaft such that a piece of tape covers a predetermined portion of the shaft.

9. An indexing tape dispenser comprising:

a body;

a supply spool and retracting spool disposed on the body; and

a claw formed by first and second arms, each pivotally attached to the body between the spools and each having rollers, configured to open responsive to a force on the rollers resulting from a shaft coming between the rollers such that the rollers rotate to travel around the shaft to apply the tape.

10. The dispenser of claim **9**, wherein a roll of tape, including a perforated tape section and backing, is stretched across the rollers between the supply spool and the retracting spool

11. The dispenser of claim **9**, wherein the first and second arms have a distal end and each include a top member and a bottom member and wherein the rollers are disposed within the top member and bottom member of each of the arms.

12. The dispenser of claim **9** further comprising a spring and a pawl, wherein the spring and pawl are operatively coupled between the retracting spool, wherein the retracting spool defines an internal gear portion, and wherein the spring, pawl and internal gear cooperate to facilitate a ratcheting mechanism.

13. The dispenser of claim **9** further comprising at least one applicator-arm spring, wherein the applicator-arm spring applies a force to each of the arms to bias the arms towards each other.

14. The dispenser of claim **13**, wherein during operation the rollers are pressed against a rounded surface to be taped, and the rollers and the at least one spring are biased around the rounded surface to apply pressure between a piece of tape and the rounded surface.

15. The dispenser of claim **9**, wherein each of the rollers has an outer diameter and wherein the outer diameter corresponds to a diameter of the shaft such that a piece of tape covers a predetermined portion of the shaft.

16. A tape applicator device comprising:

a planar body;

a supply pulley and a retracting pulley each pivotally attached to the body;

a claw formed by first and second applicator arms each pivotally attached to a portion of the body that is disposed between the supply pulley and the retracting pulley; and

at least two rollers, wherein each of the rollers is pivotally attached to a distal end of one of the first and second applicator arms, wherein during operation, as the device moves towards a rounded surface, the rollers move circumferentially about the rounded surface and the supply pulley is rotated to provide a perforated piece of tape, and wherein as the device is removed from the rounded surface, the retracting pulley retracts a roll of tape such that a new piece of perforated tape is positioned across the rollers.

17. The device of claim **16** further comprising a spring and a pawl, wherein the spring and pawl are operatively coupled between the retracting pulley, wherein the retracting pulley defines an internal gear portion, and wherein the spring, pawl and internal gear portion cooperate to facilitate a ratcheting movement of the retracting pulley.

18. The device of claim **17** further comprising at least one applicator-arm spring, wherein the applicator-arm spring applies a force to each of the arms to bias the arms towards each other.

19. The device of claim **18**, wherein each of the rollers has an outer diameter and wherein the outer diameter corresponds to a diameter of a shaft such that the piece of tape covers a predetermined portion of the shaft.

20. The device of claim **19**, wherein the retracting pulley is in a locked position before the shaft comes between the rollers and wherein the spring provides sufficient force to rotate the retracting pulley after the piece of tape is applied and the rollers come together.

* * * * *