MEDICAL INSTRUMENT STERILIZATION POUCH

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ABSTRACT

The sterilization pouch includes a sealable inner space for receiving one or more medical instruments, a preferred instrument being a hinged plier. The pouch is generally comprised of first and second layers, the layers being sealed around a peripheral edge except a separation in the seal to form an opening for accessing the inner space and a flap for closing the opening. The pouch has an upper portion and a first and second lower portion extending therefrom, the upper portion being comprised of a vertical length just as long or longer than the lower portions to allow for insertion and removal of the instrument through the opening, wherein the opening is along the peripheral edge of the upper portion. A recessed portion separates the first and second lower portions, such as to permit the inner space to connect the first and second lower portions only through the upper portion.
MEDICAL INSTRUMENT STERILIZATION POUCH

CROSS REFERENCE TO RELATED APPLICATIONS
[0001] I hereby claim benefit under Title 35, United States Code, Section 120 of U.S. patent application Ser. No. 11/622,942 filed Jan. 12, 2007. This application is a continuation of the 11/622,942 application. The 11/622,942 application is currently pending. The 11/622,942 application is hereby incorporated by reference into this application.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT
[0002] Not applicable to this application.

BACKGROUND OF THE INVENTION
[0003] 1. Field of the Invention
[0004] The present invention relates generally to sterilization pouches and more specifically it relates to a medical instrument sterilization pouch for efficiently bagging hinged instruments.
[0005] 2. Description of the Related Art
[0006] Any discussion of the related art throughout the specification should in no way be considered as an admission that such related art is widely known or forms part of common general knowledge in the field.
[0007] Sterilization pouches have been in use for years. Typically, when in a medical, dental or other similar environment it is necessary to keep all the instruments in pouches prior to use. The pouches effectively serve to prevent germs or other harmful toxins from coming in contact with the instruments when the instruments are not being used. The instruments are also generally sterilized prior to being inserted into the pouch or sterilized while inserted within the pouch.
[0008] Sterilization pouches are manufactured from many different materials, sizes and with different sealing mechanisms. Although, one universal feature that generally exists in all sterilization pouches is that the sterilization pouches are generally rectangular in shape. This poses a problem with respect to hinged instruments, such as but not limited to orthodontic pliers and surgical pliers in that the hinged instruments cannot adequately fit on their respective tool racks (i.e. pliers rack) once the hinged instruments are in the pouch. Because of the general lack of efficiency and practicality in the prior art there is the need for a new and improved medical instrument sterilization pouch for efficiently bagging hinged instruments.

BRIEF SUMMARY OF THE INVENTION
[0009] The general purpose of the present invention is to provide a medical instrument sterilization pouch that has many of the advantages of the sterilization pouches mentioned heretofore. The invention generally relates to a sterilization pouch which includes a sealable inner space for receiving one or more medical instruments, a preferred instrument being hinged pliers. The pouch is generally comprised of first and second layers, the layers being sealed around a peripheral edge except a separation in the seal to form an opening for accessing the inner space and a flap for closing the opening. The pouch has an upper portion and a first and second lower portion extending therefrom, the upper portion being comprised of a vertical length just as long or longer than the lower portions to allow for insertion and removal of the instrument through the opening, wherein the opening is along the peripheral edge of the upper portion. A recessed portion separates the first and second lower portions, such as to permit the inner space to connect the first and second lower portions only through the upper portion.

[0010] There has thus been outlined, rather broadly, some of the features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and that will form the subject matter of the appended hereto.

[0011] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction or to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of the description and should not be regarded as limiting.

[0012] An object is to provide a medical instrument sterilization pouch for efficiently bagging hinged instruments.

[0013] Another object is to provide a medical instrument sterilization pouch that accommodates a variety of different style hinged instruments.

[0014] An additional object is to provide a medical instrument sterilization pouch that may be utilized with non-hinged instruments.

[0015] A further object is to provide a medical instrument sterilization pouch that allows the hinged instruments to be placed on their respective holding racks (i.e. pliers rack) after the hinged instruments are bagged.

[0016] Another object is to provide a medical instrument sterilization pouch that includes a durable outer material to prevent puncture by the instrument.

[0017] Another object is to provide a medical instrument sterilization pouch that mimics the shape and size of the medical instruments utilized thus producing less environmental and biological waste.

[0018] Other objects and advantages of the present invention will become obvious to the reader and it is intended that these objects and advantages are within the scope of the present invention. To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS
[0019] Various other objects, features and attendant advantages of the present invention will become fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views, and wherein:

[0020] FIG. 1 is an upper perspective view of the present invention in use and positioned upon a tool rack.

[0021] FIG. 2 is a front view of the present invention.
FIG. 3 is an upper perspective view of the present invention with a medical instrument partially inserted within the pouch.

FIG. 4 is an upper perspective view of the present invention with a medical instrument inserted within the pouch.

FIG. 5 is an upper perspective view of the present invention with a medical instrument inserted within the pouch and the flap sealed upon the pouch.

FIG. 6 is a sectional view taken along lines 6-6 of FIG. 2.

FIG. 7 is a front view of a pouch illustrating a first step in a first example of manufacturing the present invention.

FIG. 8 is a front view of a pouch illustrating a second step in the first example of manufacturing the present invention.

FIG. 9 is a front view of a pouch illustrating a first step in a second example of manufacturing the present invention.

FIG. 10 is a front view of a pouch illustrating a second step in the second example of manufacturing the present invention.

FIG. 11 is a front view of a first alternative embodiment of the present invention.

FIG. 12 is a front view of a second alternative embodiment of the present invention.

FIG. 13 is a front view of a third alternative embodiment of the present invention.

FIG. 14 is a front view of a fourth alternative embodiment of the present invention.

FIG. 15 is a front view of a fifth alternative embodiment of the present invention.

FIG. 16 is a front view of a sixth alternative embodiment of the present invention.

FIG. 17 is a front view of a seventh alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

A. Overview

Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, FIGS. 1 through 17 illustrate a medical instrument sterilization pouch 10, which comprises a pouch 20 including a first layer 30 and a second layer 40, wherein the first layer 30 and/or the second layer 40 are comprised of a gas permeable material and wherein the first layer 30 is attached to the second layer 40 via an outer seal 42 substantially surrounding an outer perimeter of the first layer 30 and the second layer 40. The layers 30, 40 are sealed around a peripheral edge except a separation in the seal 42 to form an opening 29 for accessing the inner space and a flap 50 for closing the opening 29.

The pouch 20 includes a first lower portion 21 and a second lower portion 23, wherein the first lower portion 21 is separated from the second lower portion 23 and wherein the first lower portion 21 and the second lower portion 23 form a recessed portion 27 between thereof. The upper portion 25 is comprised of a vertical length just as long or longer than the lower portions 21, 23 to allow for insertion and removal of the instrument 12 through the opening 29, wherein the opening 29 is along the peripheral edge of the upper portion 25. The pouch 20 preferably receives a medical instrument 12 (e.g. surgical pliers), wherein the medical instrument 12 is sterilized within the pouch 20 and is then positioned upon a respective tool rack 14 (i.e. pliers rack).

B. Pouch

The pouch 20 is preferably comprised of a configuration to hold hinged medical instruments 12, such as but not limited to orthodontic pliers, surgical pliers, tweezers and scissors. The pouch 20 also preferably adequately holds non-hinged medical instruments 12, such as but not limited to inspection mirrors, dental picks, dental scalers and spatulas, wherein the non-hinged medical instruments 12 are simply inserted into the pouch 20 in a crossed manner. It is also appreciated that the pouch 20 may hold various other tools or equipment not associated with medical use. The pouch 20 preferably mimics the shape of the medical instrument 12, thus requiring the minimal amount of packaging for each medical instrument 12.

The pouch 20 includes a first layer 30 and a second layer 40 as shown in FIG. 6. The first layer 30 and the second layer 40 are preferably both comprised of a gas permeable material. The first layer 30 and the second layer 40 are further impermeable to micro-organisms or toxins. The first layer 30 and the second layer 40 are further preferably comprised of a material resistant enough to withstand both steam and dry heat sterilization cycles. The first layer 30 and the second layer 40 may further be comprised of various materials, such as but not limited to nylon films, polypropylene films, polyethylene films, polyester polypropylene pellets, blends of medical grade paper or a combination of two or more materials. The first layer 30 and the second layer 40 are further preferably comprised of a transparent material so as to easily view the medical instrument 12 within the pouch 20. The first layer 30 and the second layer 40 may also include chemical, steam and heat activated indicators. The indicators are preferably painted on the first layer 30 or the second layer 40.

The first layer 30 and the second layer 40 may be comprised of a plurality of different shapes and sizes, wherein each of the configurations of the first layer 30 and the second layer 40 forms a recessed portion 27 to receive the legs of a medical instrument 12 as illustrated in FIGS. 1 through 17. The first layer 30 and the second layer 40 are further preferably comprised of substantially similar configurations.

The first layer 30 and the second layer 40 are preferably attached substantially near an outer perimeter of the first layer 30 and the second layer 40 via an outer seal 42 as shown in FIGS. 1 through 5. The outer seal 42 extends substantially across an entire perimeter of the first layer 30 and the second layer 40, wherein the outer seal 42 leaves room for an opening 29 along at least one outer edge to access the inner space between the first layer 30 and the second layer 40.

The pouch 20 includes the first lower portion 21, the second lower portion 23 and the upper portion 25 opposite the first lower portion 21 and the second lower portion 23. The first lower portion 21 and the second lower portion 23 are preferably separately formed, wherein each lower portion preferably receives a respective leg of a medical instrument 12. In the case of the medical instrument 12 being comprised of a medical, hinged pliers, the head of the pliers 12 is received by the upper portion 25, the first leg of the pliers 12 is received by the first lower portion 21, and the second leg of the pliers 12 is received by the second lower portion 23 as illustrated in FIGS. 1 and 3-5.

The recessed portion 27 is formed between the first lower portion 21 and the second lower portion 23 as shown in
FIGS. 1 through 5. The recessed portion 27 is preferably positioned upon a respective tool rack 14 (i.e., pliers rack) when storing or sterilizing the medical instrument 12 (i.e., surgical pliers) within the pouch 20 as illustrated in FIG. 1. Sterilizing the surgical pliers or other hinged instruments 12 upon the pliers rack 14 prevents the pouches 20 from being stuck upon one another, wherein stacking multiple medical instruments 12 upon one another may prevent the sterilization substance from coming in contact with the entire medical instrument 12. Utilizing the tool rack 14 allows the pouches 20 to be spaced adequately apart and thus allows the sterilization substance to effectively contact all surfaces of the medical instrument 12.

[0045] The recessed portion 27 is preferably comprised of a triangular shaped configuration. An apex of the recessed portion 27 preferably extends upwardly toward the upper portion 25 as shown in FIGS. 1 through 5. It is appreciated that the recessed portion 27 may also be comprised of a substantially semi-circular or oval shaped configuration as illustrated in FIGS. 16 and 17, or may have a flat upper edge as illustrated in FIG. 15. It is further appreciated that the recessed portion 27 may be comprised of a plurality of various configurations all which substantially separate the first lower portion 21 from the second lower portion 23 as illustrated in FIGS. 11 through 15. The recessed portion 27 is adapted to permit the inner space to connect the first lower portion 21 and the second lower portion 23 through the upper portion 25 and to restrict the inner space from connecting the first lower portion 21 directly to the second lower portion 23.

[0046] The first lower portion 21 and the second lower portion 23 preferably substantially mirror each other as shown in FIG. 2. The ends of the first lower portion 21 and the second lower portion 23 may also be comprised of a plurality of configurations, such as but not limited to flat, inclined or rounded as illustrated in FIGS. 2 and 11 through 17.

[0047] The upper portion 25 extends upwardly from lower portions 21, 23 and preferably receives the head of the medical instruments 12 as illustrated in FIGS. 1, 4 and 5. The upper portion 25 may also be comprised of a plurality of configurations, as illustrated in FIGS. 11 through 17. The upper portion 25 may include at least one tapered edge or a bottle neck configuration to better conform to the overall shape of the medical instrument 12 as illustrated in FIG. 2. The inside of the pouch 20 is preferably fluidly connected from the first lower portion 21 to the upper portion 25 to the second lower portion 23. The inside of the first lower portion 21 is preferably substantially fluidly sealed from the inside of the second lower portion 23 via the recessed portion 27. The upper portion 25 may be triangular shaped such as illustrated in FIGS. 2 and 14, rectangular shaped such as illustrated in FIG. 8, or be comprised of other polygonal or curved shapes, such as illustrated in FIGS. 13 and 15-17.

[0048] The opening 29 is preferably formed along at least one edge of the upper portion 25 of the pouch 20 as shown in FIGS. 1 through 5, wherein the outer seal 42 does not extend across the perimeter of the first layer 30 and the second layer 40 along the opening 29. The opening 29 is further preferably positioned along a tapered, angular end of the upper portion 25 as illustrated in FIGS. 1 through 5. The opening 29 allows access to the inside of the pouch 20 between the first layer 30 and the second layer 40. The opening 29 is also preferably large enough to allow the hinged instrument to be inserted adequately into the pouch 20. The opening 29 may also be formed along the top edge of the upper portion 25, such as in the rectangular embodiment of FIG. 8 and thus be oriented horizontally.

[0049] The vertical length of the upper portion 25 is also preferably just as long or longer than the first lower portion 21 and also just as long or longer than the second lower portion 23 thus being able to adequately permit insertion of the medical instrument 12 within the pouch 20 through the opening 29 of the upper portion 25. Further, in some embodiments, the upper portion 25 is longer than the first lower portion 21 and is longer than the second lower portion 23. For example, the embodiment of the pouch 20 in FIG. 8 clearly illustrates that the upper portion 25 is longer in length than the first lower portion 21 and the second lower portion 23. The upper portion 25 is also illustrated as just as long or longer than the lower portions 21, 23 in FIGS. 2 and 11 through 17.

C. Flap.

[0050] The flap 50 covers the opening 29 after the medical instrument 12 has been inserted within the pouch 20 to prevent contaminants and toxins from coming into contact with the medical instrument 12. The flap 50 preferably extends along an entire length of the opening 29 as shown in FIGS. 1 through 5, wherein the opening 29 extends along an edge of the upper portion 25. The flap 50 is further preferably parallel with the opening 29 and thus may extend along an angular edge as illustrated in FIG. 2, a horizontal edge as illustrated in FIG. 8, or partially along a vertical edge as illustrated in FIGS. 16 and 17.

[0051] The flap 50 includes a first flange portion 52 and a second flange portion 54. The first flange portion 52 is preferably attached to the upper portion 25 and is substantially parallel with the opening 29. The second flange portion 54 preferably extends outwardly from the first flange portion 52 as shown in FIG. 6. The second flange portion 54 further preferably extends outwardly from the upper portion 25. The second flange portion 54 is also preferably parallel with the opening 29 as illustrated in FIG. 6.

[0052] The second flange portion 54 preferably includes a sealing member 56 extending across a longitudinal axis of the second flange portion 54 as shown in FIG. 4. The sealing member 56 is positioned about an upper side of the second flange portion 54 of the flap 50. The sealing member 56 is further preferably comprised of an adhesive material so as to adequately stick to the upper side of the first layer 30. An outer layer 58 is preferably removably attached to the upper side of the sealing member 56 to prevent foreign substances from attaching to the sealing member 56 when not in use.

[0053] The sealing member 56 and the outer layer 58 function in a similar manner to a sticker, wherein the backing of the sticker must be removed to attach the sticky surface to an object. It is appreciated that the opening 29 of the pouch 20 may be sealed utilizing a plurality of various manners rather than the preferred method, such as but not limited to a self-sealing extremity or a thermo-sealing blade.

D. Manufacture of Invention.

[0054] The present invention may be manufactured in various manners as illustrated in FIGS. 7 through 11. A first example of a way to manufacture the present invention involves utilizing a standard rectangular pouch 20 as illustrated in FIGS. 7 and 8. A wedge is cut out of the pouch 20 from a substantially center bottom edge of the pouch 20 as
illustrated by the cutting line 60 in FIG. 7. The wedge is preferably comprised of a substantially triangular shaped configuration. The wedge is then removed from the bottom of the pouch 20, thus forming a first lower portion 21, a second lower portion 23 and a recessed portion 27 between thereof. The perimeter of the recessed portion 27 is then sealed to prevent any microorganisms or toxins from entering the inside of the pouch 20 via the recessed portion 27.

[0055] A second example of a way to manufacture the present invention is illustrated in FIGS. 9 and 10. A quadrilateral shaped hole is first cut through a substantial center of the sheet as illustrated by the cutting line 60 in FIG. 9. The sheet is preferably comprised of a pouch 20 material. The quadrilateral shaped hole is preferably cut, wherein each opposing corner perpendicularly faces an outer edge of the sheet as illustrated in FIG. 9. The quadrilateral shaped hole is then removed from the sheet, thus forming a hole in the center of the sheet. The sheet is then folded in the middle as illustrated by the folding line 61 in FIG. 9. The opposing ends of the sheet are thus joined and form a pouch 20 as shown in FIG. 10. The pouch 20 may then be sealed around the outer perimeter of the pouch 20. An opening 29 is also preferably left unsealed to allow insertion of a medical instrument 12. It is appreciated that the present invention may be manufactured in a plurality of manners other than the described manners above.

E. In Use.

[0056] In use, the medical instrument 12 (i.e. surgical pliers) is first inserted within the pouch 20 by inserting the handles or legs of the medical instrument 12. Each respective leg is inserted within the respective lower portion 21, 23 of the pouch 20 and the head of the medical instrument 12 is inserted within the upper portion 25 of the pouch 20. When the medical instrument 12 is adequately positioned within the sealed pouch 20 the medical instrument 12 may be sterilized via various techniques, such as but not limited to steam sterilization. It is appreciated that the medical instrument 12 may be sterilized in a plurality of manners and also before insertion into the pouch 20.

[0057] The outer layer 58 of the flap 50 is then removed thus revealing the sealing member 56. The second flap portion 54 is then folded over the opening 29 of the pouch 20 and the sealing member 56 is attached to the upper surface of the first layer 30 thus sealing the medical instrument 12 within the pouch 20. The medical instrument 12 may now be positioned upon the respective tool rack 14 (i.e. pliers rack). When the user is ready to utilize the medical instrument 12 the above process is simply reversed. The sealed pouch 20 can also be opened by utilizing a scissors to cut open the pouch 20. In addition, a slit 44 anywhere along the non-sealed periphery of the pouch 20, as shown in FIG. 2, would allow the operator to tear open the pouch 20 with their fingers.

[0058] Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. Although methods and materials similar to or equivalent to those described herein can be used in the practice or testing of the present invention, suitable methods and materials are described above. All publications, patent applications, patents, and other references mentioned herein are incorporated by reference in their entirety to the extent allowed by applicable law and regulations. In case of conflict, the present specification, including definitions, will control.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive. Any headings utilized within the description are for convenience only and have no legal or limiting effect.

The invention claimed is:

1. A sterilization pouch having a sealed inner space therein for receiving one or more medical instruments, said sterilization pouch comprising:
   an upper portion;
   a first lower portion extending from said upper portion; and
   a second lower portion extending from said upper portion;

   and
   a recessed portion separating said first lower portion from said second lower portion, said recessed portion being below said upper portion, said recessed portion adapted to permit said inner space to connect said first lower portion and said second lower portion through said upper portion and to restrict said inner space from connecting said first lower portion directly to said second lower portion;

   wherein said upper portion is comprised of a vertical length just as long or longer than said first lower portion and wherein said upper portion is comprised of a vertical length just as long or longer than said second lower portion.

2. The sterilization pouch of claim 1, wherein said upper portion is comprised of a vertical length longer than said first lower portion and wherein said upper portion is comprised of a vertical length longer than said second lower portion.

3. The sterilization pouch of claim 1, wherein said upper portion is comprised of a triangular shaped structure.

4. The sterilization pouch of claim 1, wherein said upper portion is comprised of a rectangular shaped structure.

5. The sterilization pouch of claim 1, wherein said upper portion includes an opening along a peripheral edge, wherein said opening connects to said inner space.

6. The sterilization pouch of claim 5, including a flap extending from said upper portion, wherein said flap seals said opening.

7. The sterilization pouch of claim 6, wherein said opening and said flap extend along an angular edge of said upper portion.

8. The sterilization pouch of claim 6, wherein said opening and said flap extend along a top edge of said upper portion.

9. The sterilization pouch of claim 8, wherein said opening and said flap are horizontally oriented.

10. The sterilization pouch of claim 6, wherein said opening and said flap are positioned entirely above said recessed portion.

11. A sterilization pouch comprising:
   a first layer and a second layer wherein said first layer is attached to said second layer via an outer seal substantially surrounding an outer perimeter;

   wherein said first layer and said second layer form an inner space between thereof for receiving one or more medical instruments;

   an upper portion;

   a first lower portion extending from said upper portion; and

   a second lower portion extending from said upper portion;

   and

   a recessed portion separating said first lower portion from said second lower portion, said recessed portion being
below said upper portion, said recessed portion adapted
to permit said inner space to connect said first lower
portion and said second lower portion through said
upper portion and to restrict said inner space from con-
necting said first lower portion directly to said second
lower portion;
wherein said upper portion is comprised of a vertical length
just as long or longer than said first lower portion and
wherein said upper portion is comprised of a vertical
length just as long or longer than said second lower
portion.
12. The sterilization pouch of claim 11, wherein said first
layer and/or said second layer are comprised of a gas perme-
able material.
13. The sterilization pouch of claim 11, wherein said first
layer and said second layer are separably formed substi-
tially along at least one outer edge thus forming an opening.
14. The sterilization pouch of claim 13, including a flap
extending from said pouch, wherein said flap seals said opening.
15. The sterilization pouch of claim 11, wherein said upper
portion is comprised of a vertical length longer than said first
lower portion and wherein said upper portion is comprised of
a vertical length longer than said second lower portion.
16. A pliers and sterilization pouch, comprising:
a hinged pliers, said pliers having a working head, a first
leg, and a second leg, each of said legs extending from
said working head in a hinged manner; and
a pouch having an inner space to extend within an upper
portion, a first lower portion, and a second lower portion
of said pouch, said upper portion receives said working
head, said first lower portion receives said first leg, and
said second lower portion receives said second leg;
wherein said pouch includes a recessed portion separating
said first lower portion from said second lower portion,
said recessed portion being below said upper portion,
said recessed portion adapted to permit said inner space
to connect said first lower portion and said second lower
portion through said upper portion and to restrict said
inner space from connecting said first lower portion
directly to said second lower portion;
wherein said upper portion is above said recessed portion
and wherein said upper portion is comprised of a vertical
length just as long or longer than said first lower portion
and wherein said upper portion is comprised of a vertical
length just as long or longer than said second lower
portion.
17. The pliers and sterilization pouch of claim 16, wherein
said upper portion is comprised of a vertical length longer
than said first lower portion and wherein said upper portion is
comprised of a vertical length longer than said second lower
portion.
18. The pliers and sterilization pouch of claim 16, wherein
said upper portion is comprised of a triangular shaped struc-
ture.
19. The pliers and sterilization pouch of claim 16, wherein
said upper portion is comprised of a rectangular shaped struc-
ture.
20. The pliers and sterilization pouch of claim 16, wherein
said upper portion includes an opening along a peripheral
edge, wherein said opening connects to said inner space, and
including a flap extending from said upper portion, wherein
said flap seals said opening, wherein said opening and said
flap are positioned entirely above said recessed portion.
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