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DISPENSER FOR SHEET MATERIALS

BACKGROUND

Pop-up style dispensers have been used for some time to release individual folded sheet products such as facial tissues and the like. Such dispensers typically include a container and a stack, or "clip", of interfolded tissues disposed within the container. The tissues may be folded so that once
5 the top tissue in the clip is withdrawn, subsequent sheets are individually presented above the top plane of the container for individual use.

The above dispensers typically include a dispensing window. The dispensing window comprises a dispensing slit or cutout portion that may be configured to hold tissues for pop-up type dispensing. For example, conventional pop-up style dispensers include a plastic film that covers the
10 dispensing window. The plastic film includes the dispensing slit. Once the top tissue has been raised through the dispensing slit in the plastic film, subsequent tissues are held in an upright position by the plastic film for individual use. More particularly, once one tissue is removed from the dispenser, the following tissue is partially pulled out and is held in a substantially upright position by the slit in the plastic film.

15 Conventional dispensers for tissue products, such as facial tissues, industrial wipers, and the like, are made from a paperboard material to which the plastic film is adhered. Prior to use of the container, the dispensing window is typically covered with a perforated flap. In order to access the tissue product, the perforated flap is removed from the dispenser and discarded, thereby exposing the dispensing window and the underlying plastic film.

20 The above dispenser configuration has enjoyed tremendous success. The plastic film has been found well suited for applying a suitable amount of force to an individual tissue so that the tissue will remain in an upright position and not fall back into the interior of the dispenser.

Although plastic films have performed well in tissue dispensers, the plastic films create various problems and drawbacks. For instance, incorporating a plastic film into a carton made from
25 paperboard significantly complicates the ability to recycle the paperboard material. The presence of the plastic film, for instance, can prevent the paperboard carton from entering paper recycling streams and from being able to easily place the used dispensing carton back into a repulping process. In addition, the flap that must be initially removed from the dispenser in order to expose the plastic dispensing window represents waste that is typically not recaptured in the recycling stream but,
30 instead, is disposed separately from the used container.

In addition, previous attempts to replace slit plastic films with more environmentally friendly materials have not been entirely successful. For example, U.S. Patent No. 5,316,177, which discloses

a pop-up facial tissue carton with a paper window having an elongated opening with two or more slits emanating from its two ends, created a large degree of friction between the dispensed tissue sheet and the paper window. While the high degree of friction prevented fallbacks, it was noisy and caused tearing of the paper window. German Utility model G9108036 also discloses a carton having a paper
5 dispensing window. To reduce the degree of friction between the dispensed sheet and the paper dispensing window, the window is provided with an opening that extends all the way to the carton opening at two or more points. While such designs may reduce the amount of friction, they are susceptible to fallbacks and the window is easily deformed, bent, or torn.

In view of the above, a need currently exists for an improved dispenser opening configuration
10 that can hold a tissue sheet in an upright position for facilitating pop-up dispensing while minimizing fallback of the tissues into the dispenser. A need also exists for a sustainable tissue dispenser that can enter a recycling stream, such as the paper recycling stream, after all the tissues have been dispensed. In addition, a need exists for a tissue dispenser that does not include a plastic film that covers a dispensing window.

SUMMARY

The present disclosure is generally directed to an improved dispenser for individual sheet materials, such as tissue products, which can fulfill one or more of the above needs. The tissue dispenser of the present disclosure, for instance, can be made exclusively from a paperboard material and, in one aspect, from a single piece blank. The dispenser can be formed without the use of a
20 plastic film making the dispenser or container sustainable and well suited for entering the paper recycling stream and/or for being fed to a repulping process and converted back into new product. In this regard, the dispenser or container of the present disclosure defines a dispensing opening that can be formed exclusively from a wall of the container that is suitably configured to facilitate pop-up dispensing of tissue sheets while minimizing fallback.

For example, in one embodiment, the present disclosure is directed to a container for holding
25 and dispensing a plurality of individual sheets. The container includes a carton having at least one carton wall and defining a hollow enclosure for receiving the plurality of sheets. A dispensing opening is disposed on the at least one carton wall. The dispensing opening has a perimeter sufficient to permit sheets to be dispensed therethrough. In accordance with the present disclosure, the
30 dispensing opening is associated with a first parabolic flap having a first apex end and a second parabolic flap having a second apex end. The first apex end of the first parabolic flap is spaced from the second apex end of the second parabolic flap. The first and second apex ends form a portion of the perimeter of the dispensing opening. The first parabolic flap comprises two diverging slits that

extend from the first apex end and, similarly, the second parabolic flap comprises two diverging slits that extend from the second apex end.

The dispensing opening is further associated with a first resilient edge opposing and spaced from a second resilient edge. The first resilient edge forms a portion of the perimeter of the dispensing opening between the first and second apex ends and the second resilient edge forms a portion of the perimeter of the dispensing opening between opposite sides of the first and second apex ends. The first and second resilient edges have a linear or curved shape that is non-convex with respect to the dispensing opening. In one aspect, the first and second resilient edges are more resilient to upward forces caused by sheets being dispensed through the dispensing opening than the first and second apex ends of the first and second parabolic flaps. In this manner, the sheets being dispensed from the carton travel through at least one of the slits defined by the parabolic flaps. The slits apply sufficient pressure to a sheet emerging from the dispensing opening for holding the sheet in a partially extended position while preventing the sheet from falling back into the carton. Further, the above pop-up feature is created and produced by the dispensing opening without any polymer film being located below the dispensing opening and attached to the carton. In addition, the carton can be made from a single piece of material, such as a single blank. Although the carton can be made from various different materials including a polymer material, in one embodiment, the carton is made from a paperboard, such as a coated paper. The paperboard, for instance, can have a basis weight of from about 40 gsm to about 80 gsm.

In one embodiment, the container can further include a first score line spaced from the first resilient edge and a second score line spaced from the second resilient edge. The first and second score lines can have a shape that makes the corresponding first and second resilient edges more resilient to upward forces. For example, the first and second score lines can have an angular shape including a vertex. The vertex can point towards the corresponding resilient edge. In one aspect, the first and second score lines form obtuse angles. The first score line can extend from one slit on the first parabolic flap to one of the slits on the second parabolic flap. Similarly, the second score line can extend from the opposite slit on the first parabolic flap to the opposite slit on the second parabolic flap.

As described above, the first resilient edge and the second resilient edge can have a linear or curved shape. In one embodiment, the first resilient edge and the second resilient edge both have a concave shape or can be in the shape of a wavy line with respect to the dispensing opening.

The dispensing opening can have a size and shape that is sufficient to receive the hand of a user for grasping sheet materials contained within the carton. In one embodiment, the dispensing opening has a length between the first and second resilient edges of from about 40 mm to about 65 mm. The dispensing opening can have a width between the first and second apex ends that is also

from about 40 mm to about 65 mm. The carton made in accordance with the present disclosure can have any suitable shape. For instance, the carton can be rectangular or can have curved walls.

In one embodiment, the dispensing opening is created by removing a perforated dispensing flap that forms the first and second apex ends and the first and second resilient edges. In this regard, the apex ends and the resilient edges can be formed from the at least one carton wall and can be coplanar with a surface of the at least one carton wall.

The container of the present disclosure can be used to dispense all different types of sheets, including facial tissues, premoistened wipes, industrial wipes, paper towels, and the like.

Another embodiment of the present disclosure is directed to a carton having at least one carton wall and defining a hollow enclosure for receiving a plurality of sheets. A dispensing opening is disposed on the at least one carton wall. The dispensing opening has a perimeter sufficient to permit sheets to be dispensed therethrough. A first parabolic flap having a first apex end is spaced from a second parabolic flap having a second apex end. The first and second apex ends form a perimeter of the dispensing opening. Each of the parabolic flaps comprise two diverging slits that extend from the corresponding apex end. The carton further includes a first resilient edge opposing and spaced from a second resilient edge that both form a portion of the perimeter of the dispensing opening. The first resilient edge and the second resilient edge are positioned between first and second apex ends. In accordance with the present disclosure, the first and second resilient edges are more resilient to upward forces caused by sheets being dispensed through the dispensing opening than the first and second apex ends of the first and second parabolic flaps. In this manner, the first and second parabolic flaps act as springs that apply pressure to sheets being dispensed through the opening. In addition, the slits extending from the apex ends also apply pressure to a sheet emerging from the dispensing opening for holding the sheet in a partially extended position while preventing the sheet from falling back into the carton.

Other features and aspects of the present disclosure are discussed in greater detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

A full and enabling disclosure of the present disclosure is set forth more particularly in the remainder of the specification, including reference to the accompanying figures, in which:

Figure 1 is a perspective view of one embodiment of a container made in accordance with the present disclosure;

Figure 2 is a top plan view of the container illustrated in Figure 1;

Figure 3 is one embodiment of a blank that may be used to produce the container illustrated in Figure 1;

Figure 4 is another embodiment of a container made in accordance with the present disclosure;

Figure 5 is a top plan view of the container illustrated in Figure 4;

Figure 6 is one embodiment of a blank that may be used to produce the container illustrated in
5 Figure 4;

Figure 7 illustrates a sheet material being dispensed from the container illustrated in Figure 1;
and

Figure 8 is an alternative perspective view of a sheet material being dispensed from the
container illustrated in Figure 1.

10 Repeat use of reference characters in the present specification and drawings is intended to
represent the same or analogous features or elements of the present invention.

DEFINITIONS

As used herein, the term "dispensing opening" generally refers to an opening formed in one or
more walls or panels of a dispensing container through which sheet materials are dispensed such as,
15 for example, facial tissues.

As used herein the term "paper" or "paperboard" generally refers to a fibrous structure in sheet
format. Paper useful in the present invention may be manufactured from a variety of paper-making
fibers, such as, for example, natural fibers or synthetic fibers, or any other suitable fibers, and any
combination thereof. Papermaking fibers useful in the present invention include cellulosic fibers
20 commonly known as wood pulp fibers. Applicable wood pulps include chemical pulps, such as Kraft,
sulfite, and sulfate pulps, as well as mechanical pulps including, for example, groundwood,
thermomechanical pulp and chemically modified thermomechanical pulp.

As used herein the term "slit" generally refers to a cut where no material is removed. In
certain embodiments a tissue carton of the present invention may be provided with a top wall having
25 slits that are used to form or assist a dispensing opening.

As used herein the term "tissue" generally refers to any individual sheet product, such as facial
tissue, dry or moistened wipes, for example household or industrial wipes, soap or fabric softening
sheets, or the like. Normally, the basis weight of sheet products to be dispensed by the cartons of the
present invention is less than about 80 grams per square meter (gsm), in some embodiments less than
30 about 60 gsm, and in some embodiments, between about 10 to about 60 gsm.

DETAILED DESCRIPTION

It is to be understood by one of ordinary skill in the art that the present discussion is a
description of exemplary embodiments only and is not intended as limiting the broader aspects of the
present disclosure.

In general, the present disclosure is directed to a dispensing container for sheet materials, such as facial tissues, wipers, and the like. Of particular advantage, the container of the present disclosure can be sustainable and made entirely from biodegradable, compostable, and/or repulpable materials, such as a paper, a paperboard, or a recyclable polymer or other material. In one aspect, for instance, the container made according to the present disclosure, once emptied, can be collected and processed through a recycling stream, such as the paper recycling stream. In one embodiment, the container can be constructed without containing any polymer films. In fact, the empty container, in one embodiment, can be repulpable for making other cellulose fiber-based products.

In accordance with the present disclosure, the dispensing container includes a unique dispensing opening and associated slits formed into one wall of the container that are designed to hold a sheet material, such as a facial tissue, in an upright position extending from the dispensing opening while preventing the sheet material from falling back into the interior enclosure of the container. The dispensing opening, for instance, includes a pair of opposing spring-like flaps in combination with a pair of resilient edges positioned between the flaps along the perimeter of the opening that serve to work in conjunction to produce a pop-up style dispenser having an overall simple and elegant design. In this manner, a dispensing opening is formed that is integral with a top wall of the container in a way so as to present and hold a sheet material in place while preventing fallback issues. In addition, the dispensing opening can be formed into the container without the use of any polymer films.

Referring to **FIGS. 1 and 2**, for instance, a pop-up dispensing container or carton **10** according to one embodiment of the present disclosure is shown for purposes of illustration. Generally, a clip of tissues is disposed within the container or carton. While the container of the present invention is particularly well suited for dispensing tissue sheets, such as folded facial tissue sheets, the invention is not so limited. The invention may also be utilized to dispense other types of sheet products. Thus, the term tissue is not intended to be limited to facial tissues but is used herein to include any individual sheet product, such as dry or moistened wipes, for example household or industrial wipes, soap or fabric softening sheets, or the like.

The stack of tissues may be interfolded, prefolded interfolded, or non-interfolded. As used herein, the phrase "prefolded interfolded" or "interfolded" tissues means that the tissues are folded and interleaved with neighboring tissues immediately above and/or below in the clip of tissues. The tissues can be interleaved by any suitable means, including the use of an interfolder as employed in the papermaking arts. If an interfolder is used, consecutive tissues may be attached to each other at perforation lines. In such cases, the unperforated segments of the perforation lines should be sufficiently weak to permit the consecutive tissues to separate from each other upon removal from the carton. This can be controlled by the degree of perforation of the tissue sheet. Tissues that may be

employed in a non-interfolded clip which are not interleaved with neighboring tissues are releasably attached to neighboring tissues so that upon dispensing one tissue, the next adjacent tissue is ready for dispensing. Particularly preferred folding patterns include interfolding patterns that provide somewhat less friction, which tend to avoid tearing of the tissue when extracted from the container.

5 As shown in **FIGS. 1** and **2**, the container **10** includes a top wall **12** opposite a bottom wall **14**. The container **10** further includes a pair of opposing end walls **16** and **18** and a pair of opposing side walls **20** and **22**. In the embodiment illustrated in **FIG. 1**, the dispensing container **10** has dimensions that allow for the sheet material to lay flat within the container. Thus, the dispensing container **10** as shown in **FIGS. 1** and **2** generally has a rectangular shape. In other embodiments, however, the
10 dispensing container **10** can have a more square, elevated configuration that holds the sheet materials in an upside down "U" shape as shown in **FIGS. 4** and **5**. In particular, the stack of sheet materials can be folded and placed into the dispensing container for dispensing the sheet materials one at a time. The unique dispensing opening of the present disclosure can be used in all different types of dispensing containers and the embodiment illustrated in **FIGS. 1** and **2** are provided for exemplary
15 purposes only.

 The dispensing container **10** can be constructed from any rigid material. For example, the dispensing container **10** can be made from any suitable paper, such as cardboard, carton stock, paperboard, or the like. Alternatively, the dispensing carton **10** can be made from a polymer material, particularly a recyclable polymer material. The polymer material can comprise a polypropylene, a
20 polyethylene, a polystyrene, or any other suitable plastic. In one particular embodiment, the dispensing container **10** is made from a paper, such as paperboard, which is capable of entering the paper recycling stream and/or is capable of being repulped into new products. For example, in one embodiment, the dispensing container **10** is made from a fiber sheet containing pulp fibers. The pulp fibers can comprise softwood fibers, hardwood fibers, bast fibers, recycled fibers, any other suitable
25 cellulosic fibers, and mixtures thereof. The paper can be coated on one side with a polymer and/or clay material in order to provide some moisture resistance. The paper can have a basis weight of greater than about 40 gsm, such as greater than about 50 gsm, such as greater than about 60 gsm, such as greater than about 70 gsm, such as greater than about 80 gsm, such as greater than about 90 gsm, such as greater than about 100 gsm. The basis weight of the paper is generally less than about
30 150 gsm, such as less than about 120 gsm, such as less than about 100 gsm. In one embodiment, the basis weight of the paper is from about 40 gsm to about 80 gsm.

 Not shown in the figures, the material used to produce the dispensing container **10** can also be designed to receive printed matter, such as text, trademarks, designs, and the like. For example, paper substrates are well suited for receiving printed matter. The printed matter can be applied to the

paper substrate using any suitable technique, including flexographic printing, inkjet printing, and the like. In one embodiment, printed matter can be applied to the paper substrate and the paper substrate can then be coated with a polymer coating. The polymer coating can be transparent and can be repulpable. For instance, the polymer coating can be made from a natural gum or any suitable

5 polysaccharide-based coating material.

In **FIGS. 1** and **2**, the container **10** is shown in an unopened condition. **FIGS. 7** and **8**, on the other hand, show the container **10** in an open configuration for dispensing individual sheet materials **30**. As shown in **FIGS. 1** and **2**, the container **10** includes a dispensing surface **24** that defines a dispensing opening **26**. As shown in the figures, the dispensing opening **26** can be formed into a wall
10 of the container **10**, such as the top wall **12**. The dispensing opening, for instance, can be coplanar with the surface of the top wall **12** and can be integral with the top wall **12**. In the embodiment illustrated in **FIGS. 1** and **2**, the dispensing opening **26** can initially be formed through a plurality of perforations. For example, in the embodiment illustrated in **FIGS. 1** and **2**, the dispensing opening **26** is defined by a first perforation **32** which forms a first parabolic flap **34** and a second perforation **36** that
15 forms a second and opposing parabolic flap **38**. The dispensing opening further includes a third perforation **40** that defines a first resilient edge **42** and a fourth perforation **44** that defines a second resilient edge **46**.

Optionally, the dispensing opening **26** of the container **10** can further include a perforated tab **48** that intersects the fourth perforation **44**. The perforations **32**, **36**, **40**, **44**, and **48** are all meant to be
20 opened by a user by applying pressure to the top wall **12** of the container **10**. In one embodiment, for instance, a user can first open the perforated tab **48**. Once the perforated tab **48** is opened, a user can reach into the hollow enclosure defined by the container **10** and grab a tearaway flap **50** that is defined by the perforations **32**, **36**, **40**, and **44**. The tearaway flap **50** can be removed from the container **10** and discarded leaving an access opening sufficient for a user's hand to reach into the
25 container **10**.

When opening the container **10**, in addition to removing the tearaway flap **50**, the first perforation **32** and the second perforation **36** can also be torn opened by a user, producing the first parabolic flap **34** and the second parabolic flap **38**. As shown in the figures, the first parabolic flap **34** includes a first apex end **52** and the second parabolic flap **38** includes a second apex end **54**. As
30 shown in **FIGS. 1** and **2**, the perimeter of the dispensing opening **26** is defined at one end by the first apex end **52** and at an opposite end by the second apex end **54**. The remainder of the perimeter of the dispensing opening **26** is defined by the first resilient edge **42** positioned opposite the second resilient edge **46**. The first resilient edge **42** is positioned between the first apex end **52** and the second apex end **54**, while the second resilient edge **46** is also positioned between the first apex end

52 and the second apex end **54** on an opposite side. The dimensions of the dispensing opening **26** once the container **10** is opened can vary depending upon the particular application and various factors including the type of product being dispensed. In one embodiment, for instance, the width between the first and second apex ends **52** and **54** and the length between the first and second resilient edges **42** and **46** can independently be generally greater than about 40 mm, such as greater than about 44 mm, such as greater than about 48 mm, such as greater than about 52 mm, such as greater than about 56 mm, such as greater than about 60 mm, and can generally be less than about 100 mm, such as less than about 90 mm, such as less than about 80 mm, such as less than about 70 mm, such as less than about 65 mm, such as less than about 60 mm.

As shown particularly in **FIGS. 7** and **8**, once the dispensing opening **26** is opened, the first perforation **32** and the second perforation **36** become slits. For instance, perforation **32** forms two diverging slits **32** that extend from the first apex end **52**. Similarly, perforation **36** forms two diverging slits **36** that extend from the second apex end **54**. The slits **32** and **36** have various different functions. For instance, the slits allow the parabolic flaps **34** and **38** to more freely move in an up and down manner as sheet materials are being dispensed. The parabolic flaps **34** and **38**, for instance, have spring-like characteristics during the dispensing of sheet materials **30**. In addition, as shown in **FIGS. 7** and **8**, the sheet material **30** travels through the slits **32** and **36** during dispensing. In this manner, the slits **32** and **36** apply pressure to the sheet material **30** for preventing the sheet material from falling back into the container **10** after a leading sheet material is dispensed.

While the parabolic flaps **34** and **38** can pivot in an up and down manner during dispensing of the sheet materials, the container **10** in one embodiment is configured such that the resilient edges **42** and **46** remain more stationary during dispensing of the sheet materials. For instance, the resilient edges **42** and **46** can be designed to be more resilient to upward forces caused by sheets being dispensed through the dispensing opening **26** than the first and second apex ends **52** and **54** of the first and second parabolic flaps **34** and **38**. The resiliency of the first and second resilient edges **42** and **46** can be maintained or increased based upon various design factors. For instance, the resiliency of the resilient edges **42** and **46** can depend upon the shape of the edges, the dimensions of the dispensing opening **26** and the shape and design of the parabolic flaps **34** and **38**. Optionally, various features can also be built into the container **10** for further increasing the resiliency of the resilient edges **42** and **46**. For example, in one embodiment, as shown in **FIGS. 1, 2, 7** and **8**, the container **10** can further define a first score line **56** opposite a second score line **58**. As shown in **FIG. 1**, for example, the first score line **56** can be spaced from the first resilient edge **42** while the second score line **58** can be spaced from the second resilient edge **46**. The score lines **56** and **58** have a shape that makes the corresponding first and second resilient edges **42** and **46** more resilient to

upward forces. In one embodiment, for instance, the score lines **56** and **58** can have an angular shape and a vertex such that the vertex points towards the corresponding resilient edge **42** or **46** as shown in **FIG. 1**. In the particular configuration illustrated in **FIG. 1**, for instance, the score lines **56** and **58** each extend from the first perforation or slit **32** to the second perforation or slit **36**. The first and second score lines **56** and **58** form obtuse angles. The score lines **56** and **58**, for instance, can have angular shapes of greater than about 120°, such as greater than about 140°, such as greater than about 150°, such as greater than about 160°, and generally less than about 178°.

The resiliency of the resilient edges **42** and **46** to upward forces can also depend upon the shape of the edges. For example, in **FIGS. 1** and **2**, the first and second resilient edges have a concave shape with respect to the dispensing opening **26**. Alternatively, the resilient edges **42** and **46** can be linear or can have any other suitable shape. In general, the resilient edges **42** and **46** are non-convex in shape. In one aspect, the resilient edges **42** and **46** can have a more complex shape including multiple curvatures or a combination of curvatures and linear elements.

In one embodiment, the container **10** is designed to dispense sheet materials one at a time. A stack of sheet materials can be contained within the hollow enclosure of the container **10** in an interfolded state. Once the first sheet is dispensed from the container **10**, the remaining sheets can be dispensed in a pop-up style. In particular, the dispensing opening **26** is particularly designed to dispense sheet materials in a pop-up style without having to incorporate conventionally used polymer films below the dispensing opening. In this manner, the container **10** can be made from a single type of material and thus is more amenable to recycling processes.

As described above, the parabolic flaps **34** and **38** in combination with the slits **32** and **36** and the resilient edges **42** and **46** exert sufficient pressure on an emerging sheet **30** from the dispensing opening **26** for holding the sheet in a partially extended position as shown in **FIGS. 7** and **8** while preventing the sheet **30** from falling back into the carton or container **10**. In one embodiment, the sheet materials **30** can be dispensed in a "back and forth" style. For instance, as shown in **FIG. 7**, the sheet material **30** is shown in an upright position engaged within the slit **36** such that the sheet is adjacent the resilient edge **46**. As sheet **30** is dispensed, the adjacent or trailing sheet is then maintained in an upright position as shown in **FIG. 8**. The next sheet or adjacent sheet, however, is engaged within the slits **32** and **36** adjacent the resilient edge **42**. Thus, the slits **32** and **36** on one side are used to hold a sheet material **30** in an upright position until that sheet material is dispensed and the next sheet material is then held by the slits **32** and **36** on the opposing side of the dispensing opening **26**. This design has been found to be particularly effective when dispensing interfolded sheets.

Of particular advantage, in one embodiment, the container **10** as shown in **FIGS. 1, 2, 7** and **8**, can be formed from a single piece of material or blank. For example, referring to **FIG. 3**, a single piece blank **70** is illustrated. Like reference numerals have been used to indicate similar characteristics and features in relation to the embodiment shown in **FIGS. 1** and **2**. In this regard, the blank **70** includes a
5 top wall **12** that defines a dispensing opening **26** made in accordance with the present disclosure. In particular, the top wall **12** has been perforated by perforations **32, 36, 40, 44**, and **48** to form the dispensing opening **26**. In addition, the top wall **12** has been scored with score lines **56** and **58**.

As shown in **FIG. 3**, the blank **70** further includes a bottom wall **14**, a first side wall **20** and a second side wall **22**. The blank **70** further includes tabs **72** and tabs **74**. The tabs **72** and the tabs **74**
10 combine together on each side of the blank when the blank is formed into a container **10** as shown in **FIG. 1**. More particularly, the tabs **72** and **74** are attached together to form a first end wall **16** and a second end wall **18** as shown in **FIG. 1**. The blank **70** can also include side tabs **76** that can also attach together during assembly to further form and reinforce the end walls **16** and **18**. Further, the blank **70** can include an end tab **78** that is used to connect the bottom wall **14** to the side wall **20**.

The blank **70** can be made from any suitable material. In one aspect, the blank **70** can be
15 made from a paper, such as a paperboard. The paperboard can comprise a coated paper having a basis weight of from about 40 gsm to about 80 gsm. For instance, the paperboard can be coated with a polymer coating. The polymer coating can increase moisture resistance, increase strength, and be receptive to printed matter and/or protect printed matter. In one aspect, the polymer coating can
20 contain a film-forming polymer in combination with clay particles to produce a clay coating. The clay coating can be applied to the different walls of the container prior to forming the perforations, such as perforations **32, 36, 40, 44**, and **48**. Forming the perforations through a clay coating can help prevent tearing when the perforated portions are opened and can also prevent the propagation of tears or cuts.

In forming the blank **70**, the paperboard or other material can be cut to a desired shape and
25 coated. Various score lines can then be formed into the blank in order to facilitate folding of the walls and tabs. Score lines **56** and **58** can also be formed into the top wall **12**.

In producing the product as shown in **FIG. 1**, a stack of sheet materials can be loaded into the blank **50** when in a partially assembled state or, alternatively, the blank **50** can be formed into a container around a stack of sheet materials. The sheet material can be in the form of individual sheets
30 that are interfolded together to facilitate pop-up dispensing. The sheet material contained within the dispenser product of the present disclosure can vary. In one particular application, for instance, the product of the present disclosure can be configured to dispense facial tissues. In alternative embodiments, however, the dispensing container **10** can be configured to dispense other dry wipers, wet wipes, napkins, paper towels, or the like. In one embodiment, the dispensing container **10** is

configured to dispense individual sheet materials formed from cellulosic fibers that have a bulk of greater than about 3 cc/g to about 20 cc/g and have a basis weight of from about 10 gsm to about 120 gsm, such as from about 20 gsm to about 60 gsm.

5 In the embodiment illustrated in **FIGS. 1-3** and **7-8**, the container **10** has a rectangular-like shape. In particular, the container **10** has a top wall **12** and a bottom wall **14** that generally match the length and width dimensions of a stack of interfolded sheets loaded into the container. In this manner, the sheets lay flat in the container as they are dispensed one at a time. An alternative embodiment of a container **10** made in accordance with the present disclosure is illustrated in **FIGS. 4-6**. In the embodiment illustrated in **FIGS. 4-6**, the container has a more cube-like shape. Container **10**
10 illustrated in **FIG. 4** is particularly well suited to receiving a folded stack of sheet materials in the form of a clip that are loaded into the hollow enclosure of the container. Like reference numerals in **FIGS. 4-6** have been used in order to indicate similar elements and features with respect to the embodiment illustrated in **FIGS. 1-3**.

As shown in **FIGS. 4** and **5**, the container **10** is generally in the shape of a cube and includes a
15 top wall **12**, two side walls **20** and **22**, two end walls **16** and **18**, and a bottom wall **14**. In accordance with the present disclosure, a dispensing opening **26** is formed into the top wall **12**.

As shown, the dispensing opening **26** includes perforations **32**, **36**, **40**, **44**, and **48**. The perforations form a first parabolic flap **24** having a first apex end **52** and a second parabolic flap **38** having a second apex end **54**. Perforations **44** and **48** form a first resilient edge **42** spaced from a
20 second resilient edge **46**. In addition, the dispensing opening **26** can optionally include a perforated tab **48**. The container **10** further includes a first score line **56** positioned adjacent the first resilient edge **42** and a second score line **58** positioned adjacent the second resilient edge **46**.

In the embodiment illustrated in **FIG. 4**, the first and second resilient edges **42** and **46** are in the shape of a wavy line having multiple curvatures. In addition, the parabolic flaps **34** and **38** and the
25 perforations **32** and **36** have a more rounded curvature in relation to the embodiment illustrated in **FIG. 1**. It should be understood that the dispensing opening illustrated in **FIG. 4** can be used on the container illustrated in **FIG. 1** and the dispensing opening associated with the container in **FIG. 1** can be used on the container illustrated in **FIG. 4**. Both dispensing openings have been found effective in dispensing sheet materials in a pop-up style without having to include a polymer film window.

30 The container **10** illustrated in **FIGS. 4** and **5** can be formed from a single piece blank as shown in **FIG. 6**. The blank **70** illustrated in **FIG. 6** includes a top wall **12** defining a dispensing opening **26**. The blank **70** further includes a bottom wall **14**, a first side wall **20**, and a second side wall **22**. Tabs **72** and **74** are designed to attach together to form end walls, such as end walls **16** and **18** as

shown in **FIG. 4**. The blank **70** can further include tabs **76** and end tabs **78** for attaching the walls together for forming a consolidated unit.

These and other modifications and variations to the present invention may be practiced by those of ordinary skill in the art, without departing from the spirit and scope of the present invention, 5 which is more particularly set forth in the appended claims. In addition, it should be understood that aspects of the various embodiments may be interchanged both in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only and is not intended to limit the invention so further described in such appended claims.

What Is Claimed:

1. A container for holding and dispensing a plurality of individual sheets comprising:
a carton having at least one carton wall and defining a hollow enclosure for receiving a plurality of sheets;
a dispensing opening disposed on the at least one carton wall, the dispensing opening having
5 a perimeter sufficient to permit sheets to be dispensed therethrough;
a first parabolic flap having a first apex end and a second parabolic flap having a second apex end, the first apex end being spaced from the second apex end, the first and second apex ends forming a portion of the perimeter of the dispensing opening, and wherein the first parabolic flap comprises two diverging slits that extend from the first apex end and the second parabolic flap
10 comprises two diverging slits that extend from the second apex end;
a first resilient edge opposing and spaced from a second resilient edge, the first resilient edge forming a portion of the perimeter of the dispensing opening between the first and second apex ends and the second resilient edge forming a portion of the perimeter of the dispensing opening between opposite sides of the first and second apex ends, the first and second resilient edges having a linear or
15 curved shape that is non-convex with respect to the dispensing opening.
2. A container as defined in claim 1, wherein the first and second resilient edges are more resilient to upward forces caused by sheets being dispensed through the dispensing opening than the first and second apex ends of the first and second parabolic flaps.
3. A container as defined in claim 1 or 2, further comprising a first score line spaced from the first resilient edge and a second score line spaced from the second resilient edge and wherein the first and second score lines have a shape that makes the corresponding first and second resilient edges more resilient to upward forces.
4. A container as defined in claim 2, wherein the first and second score lines have an angular shape and a vertex and wherein the vertex points toward the corresponding resilient edge.
5. A container as defined in claim 2 or 3, wherein the first and second score lines form obtuse angles.
6. A container as defined in claim 2, 3, or 4, wherein the first score line extends from one slit on the first parabolic flap to one of the slits on the second parabolic flap and wherein the second score line extends from the opposite slit on the first parabolic flap to the opposite slit on the second parabolic flap.
7. A container as defined in any of the preceding claims, wherein the first resilient edge has a concave shape and the second resilient edge has a concave shape with respect to the dispensing opening.

8. A container as defined in any of the preceding claims, wherein the dispensing opening has a length between the first and second resilient edges and a width between the first and second apex ends and wherein the length of the dispensing opening is from about 40 mm to about 65 mm and wherein the width of the dispensing opening is from about 40 mm to about 65 mm.

9. A container as defined in any of the preceding claims, wherein sheets being dispensed from the carton travel through at least one of the slits defined by the parabolic flaps, the slits applying sufficient pressure to a sheet emerging from the dispensing opening for holding the sheet in a partially extended position while preventing the sheet from falling back into the carton.

10. A container as defined in any of the preceding claims, wherein there is no polymer film located below the dispensing opening and attached to the carton.

11. A container as defined in any of the preceding claims, wherein the carton is made from a single piece of material.

12. A container as defined in any of the preceding claims, wherein the carton comprises a paperboard.

13. A container as defined in claim 12, wherein the paperboard comprises a coated paper having a basis weight of from about 40 gsm to about 80 gsm.

14. A container as defined in any of the preceding claims, wherein the dispensing opening is created by removing a perforated dispensing flap that forms the first and second apex ends and the first and second resilient edges, and wherein the first and second apex ends and the first and second resilient edges are coplanar with a surface of the at least one carton wall.

15. A container as defined in any of the preceding claims, wherein the container is formed from a single piece blank comprising a paperboard.

16. A product for dispensing a plurality of individual sheets one at a time comprising:
a stack of individual sheets; and
a container as defined in any of the preceding claims, the stack of individual sheets being positioned within the hollow enclosure.

17. A container for holding and dispensing a plurality of individual sheets comprising:
a carton having at least one carton wall and defining a hollow enclosure for receiving a plurality of sheets;

5 a dispensing opening disposed on the at least one carton wall, the dispensing opening having a perimeter sufficient to permit sheets to be dispensed therethrough;

a first parabolic flap having a first apex end and a second parabolic flap having a second apex end, the first apex end being spaced from the second apex end, the first and second apex ends forming a portion of the perimeter of the dispensing opening, and wherein the first parabolic flap

- comprises two diverging slits that extend from the first apex end and the second parabolic flap
- 10 comprises two diverging slits that extend from the second apex end;
- a first resilient edge opposing and spaced from a second resilient edge, the first resilient edge forming a portion of the perimeter of the dispensing opening between the first and second apex ends and the second resilient edge forming a portion of the perimeter of the dispensing opening between opposite sides of the first and second apex ends; and
- 15 wherein the first and second resilient edges are more resilient to upward forces caused by sheets being dispensed through the dispensing opening than the first and second apex ends of the first and second parabolic flaps.
18. A container as defined in claim 17, wherein sheets being dispensed from the carton travel through at least one of the slits defined by the parabolic flaps, the slits applying sufficient pressure to a sheet emerging from the dispensing opening for holding the sheet in a partially extended position while preventing the sheet from falling back into the carton.
19. A container as defined in claim 17 or 18, wherein there is no polymer film located below the dispensing opening and attached to the carton.
20. A container as defined in claim 17, 18, or 19, wherein the container is formed from a single piece blank comprising a paperboard.
21. A container as defined in any of claims 17 through 20, further comprising a first score line spaced from the first resilient edge and a second score line spaced from the second resilient edge and wherein the first and second score lines have a shape that makes the corresponding first and second resilient edges more resilient to upward forces.
22. A container as defined in claim 21, wherein the first and second score lines have an angular shape and a vertex and wherein the vertex points toward the corresponding resilient edge.
23. A container as defined in claim 21 or 22, wherein the first and second score lines form obtuse angles.
24. A container as defined in claim 21, 22, or 23, wherein the first score line extends from one slit on the first parabolic flap to one of the slits on the second parabolic flap and wherein the second score line extends from the opposite slit on the first parabolic flap to the opposite slit on a second parabolic flap.
25. A container as defined in any of claims 17 through 24, wherein the first resilient edge has a concave shape and the second resilient edge has a concave shape with respect to the dispensing opening.

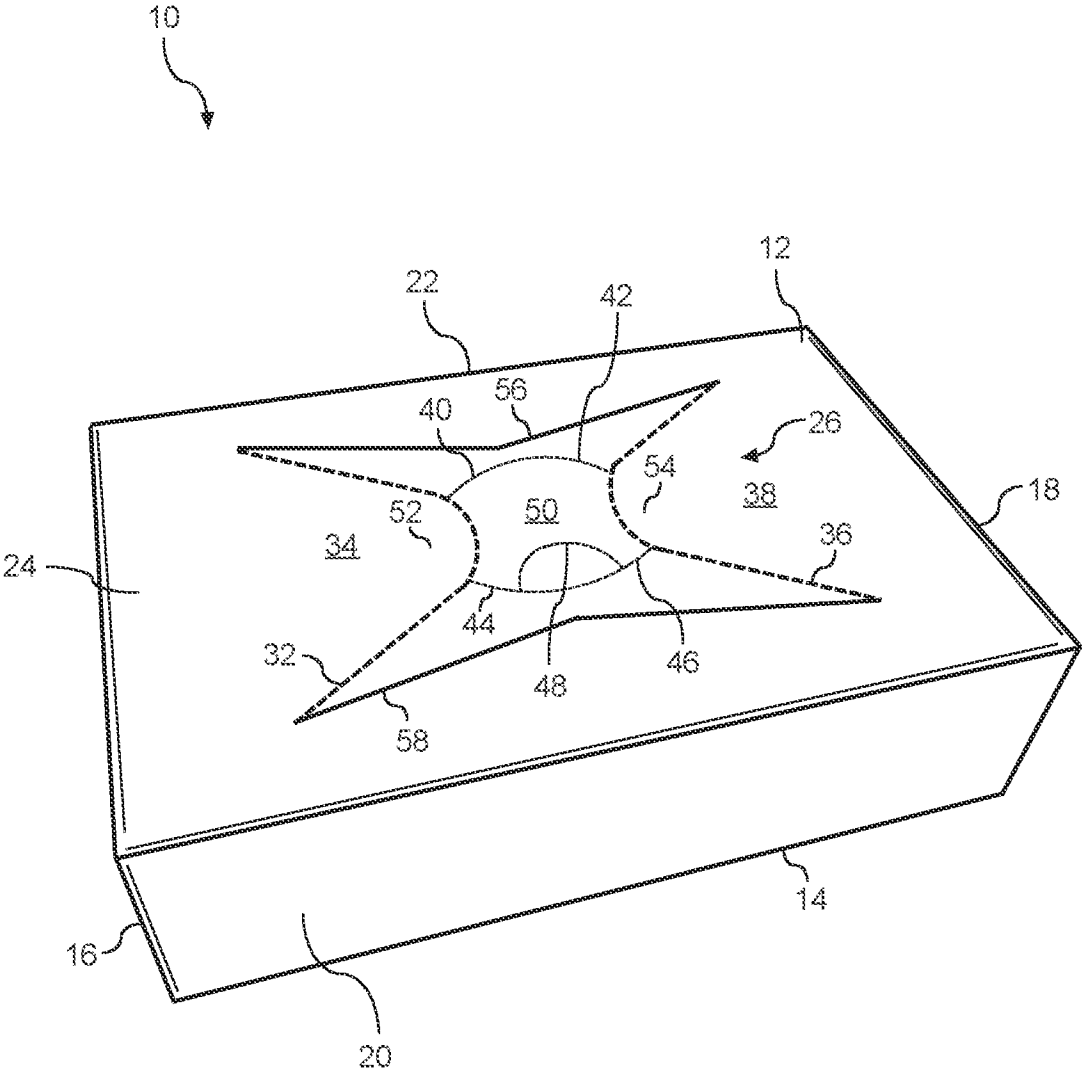


FIG. 1

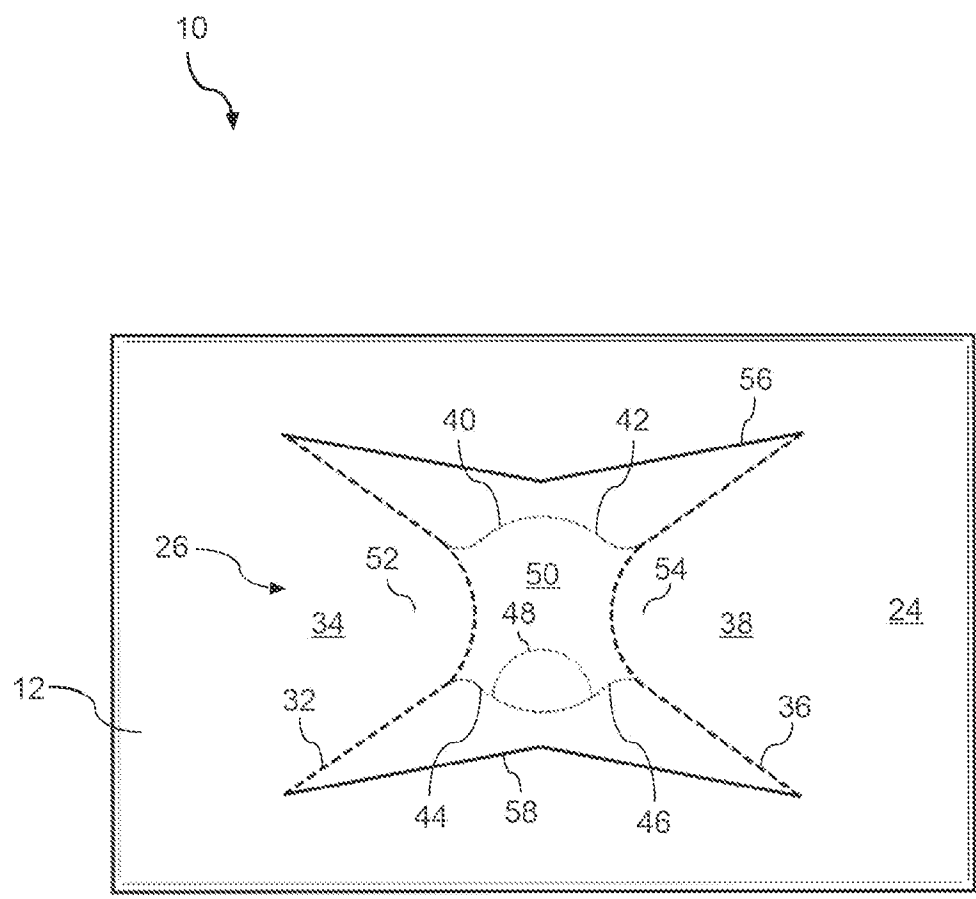


FIG. 2

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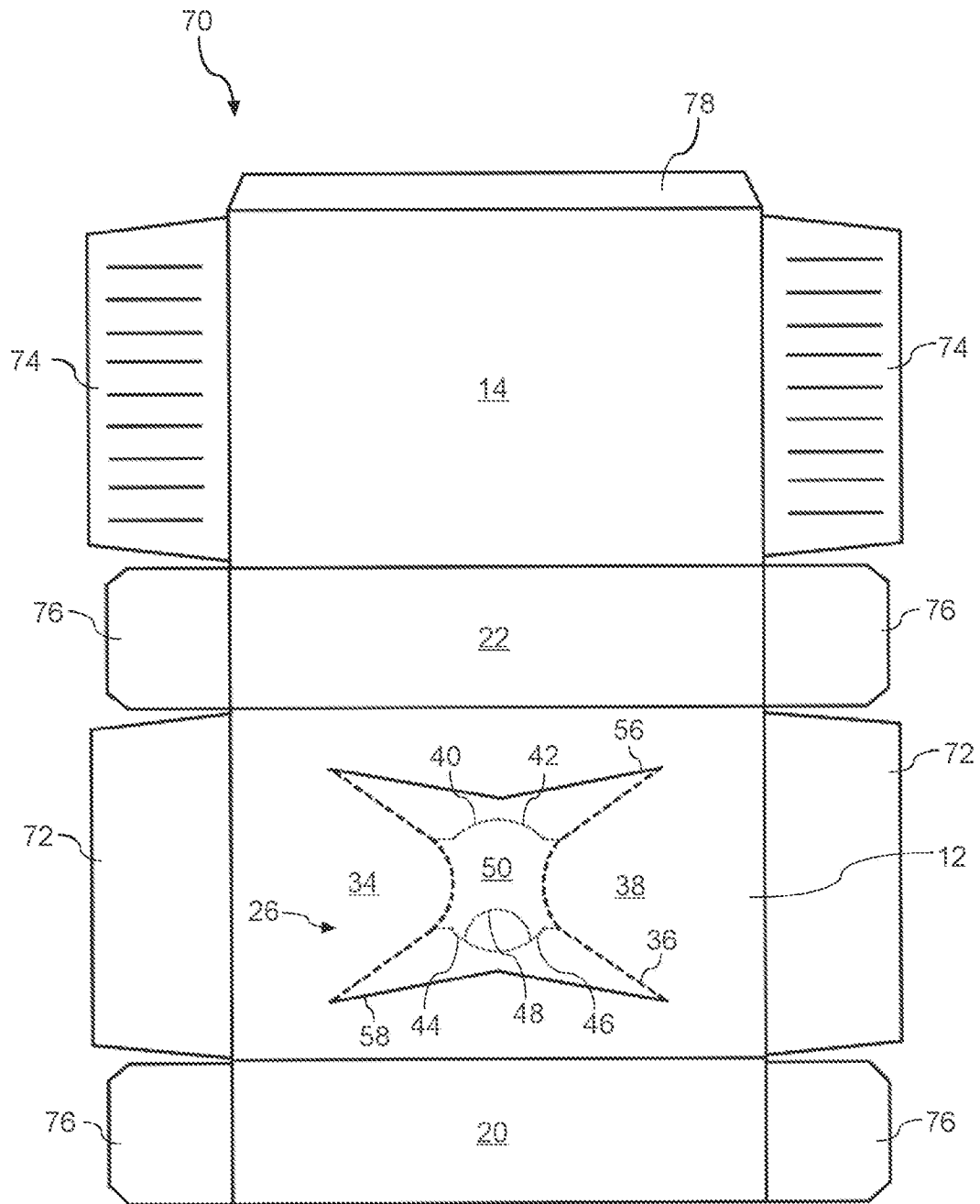


FIG. 3

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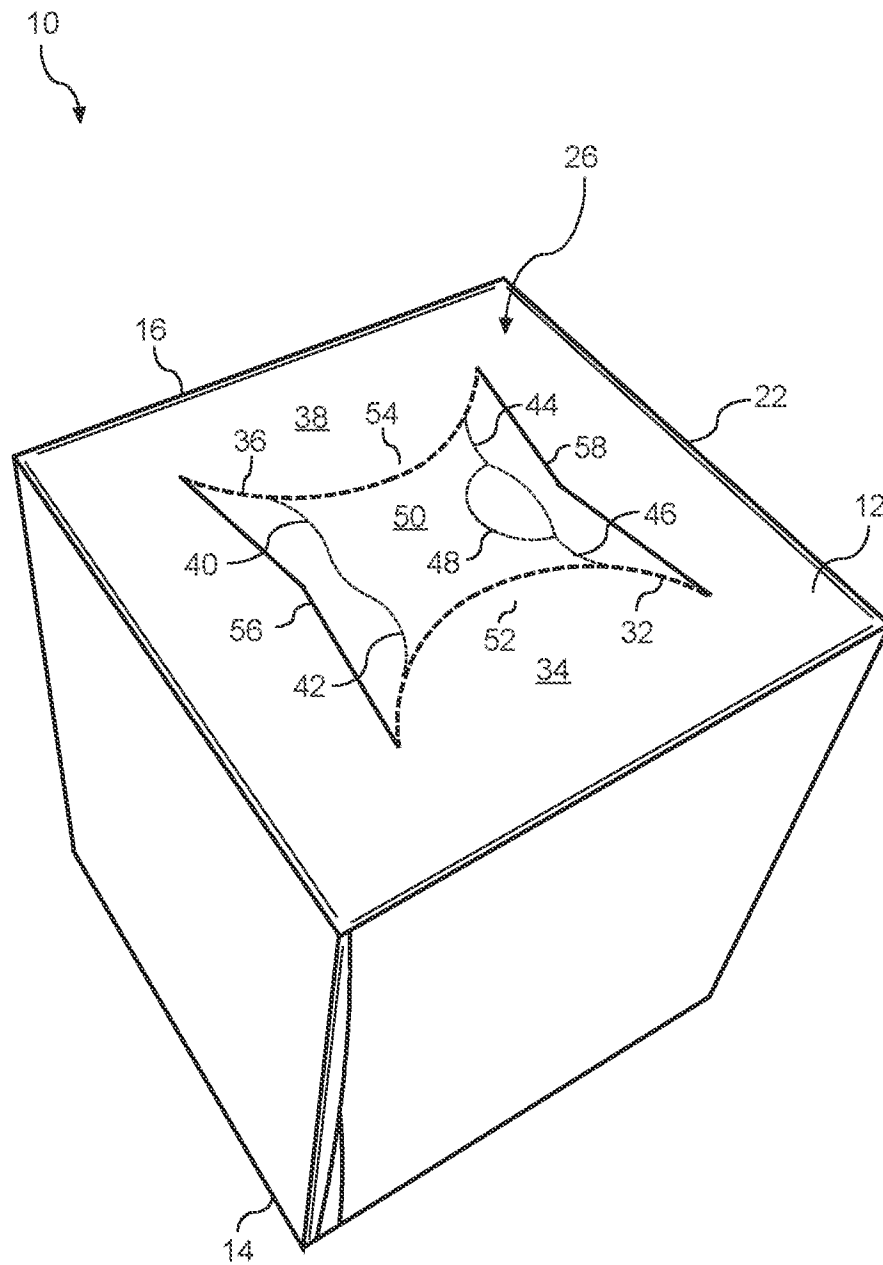


FIG. 4

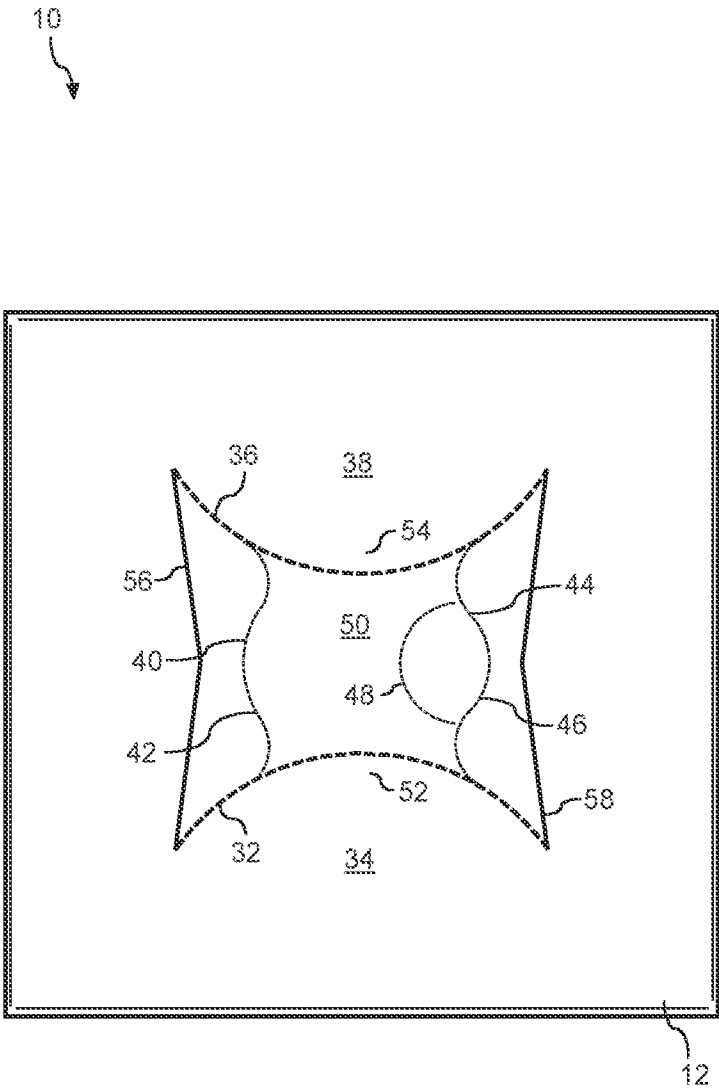


FIG. 5

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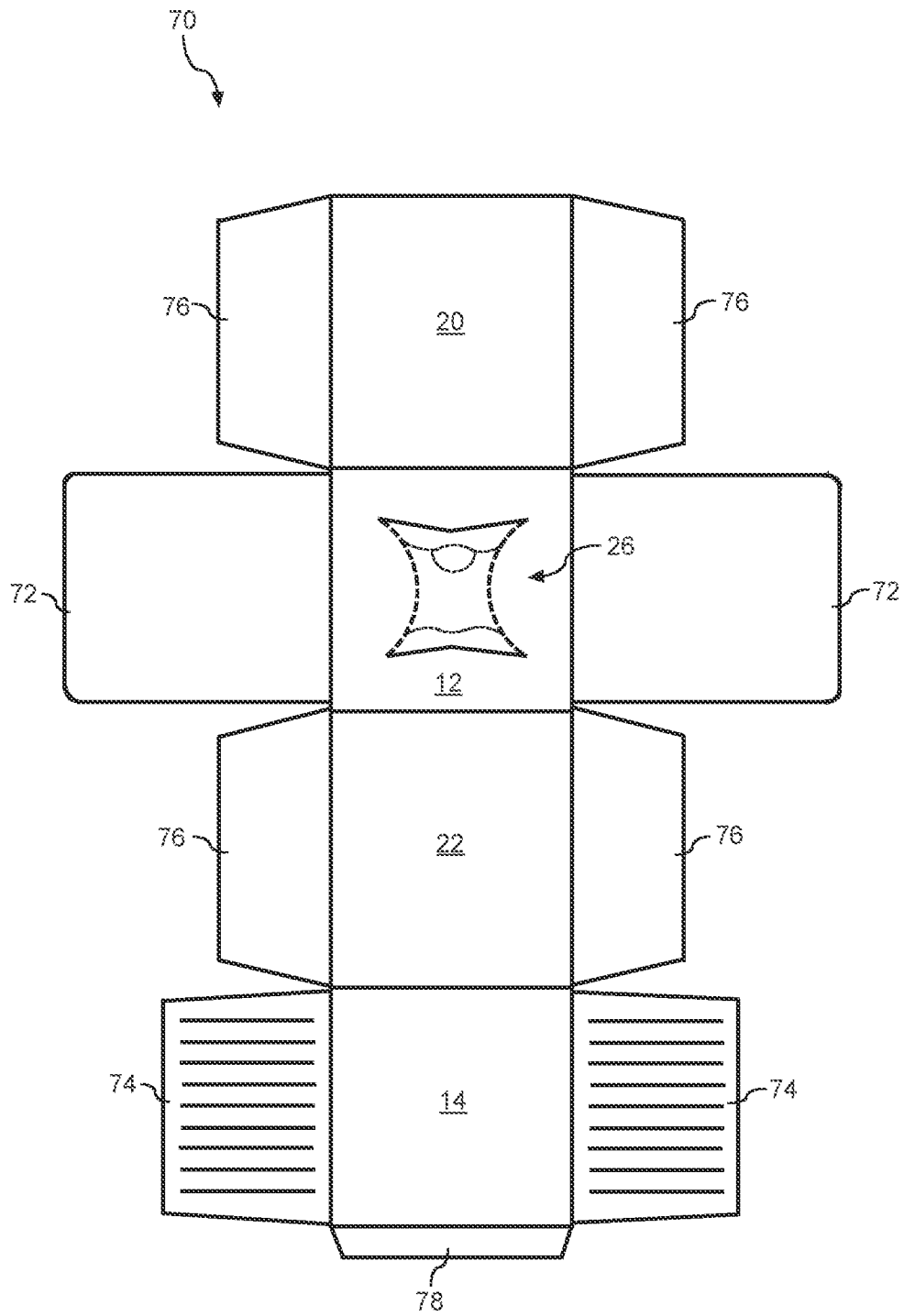


FIG. 6

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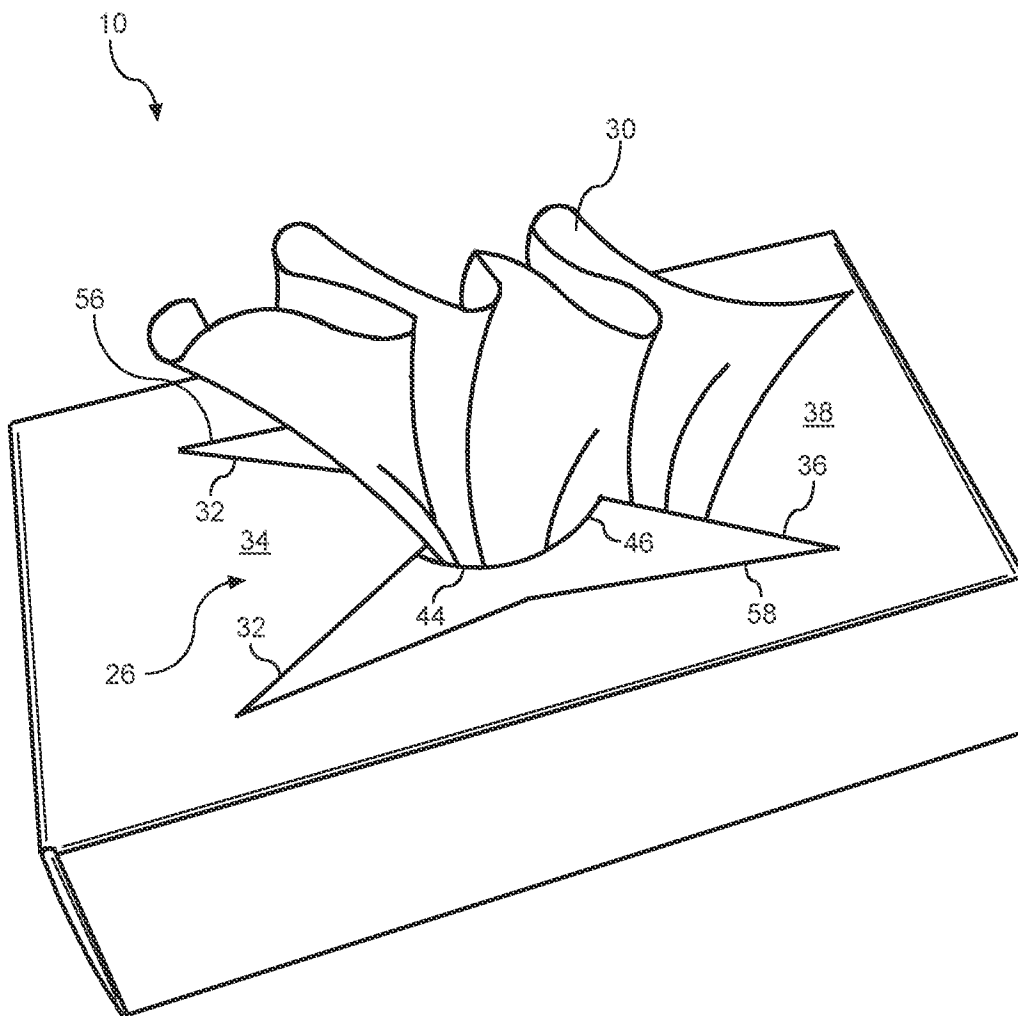


FIG. 7

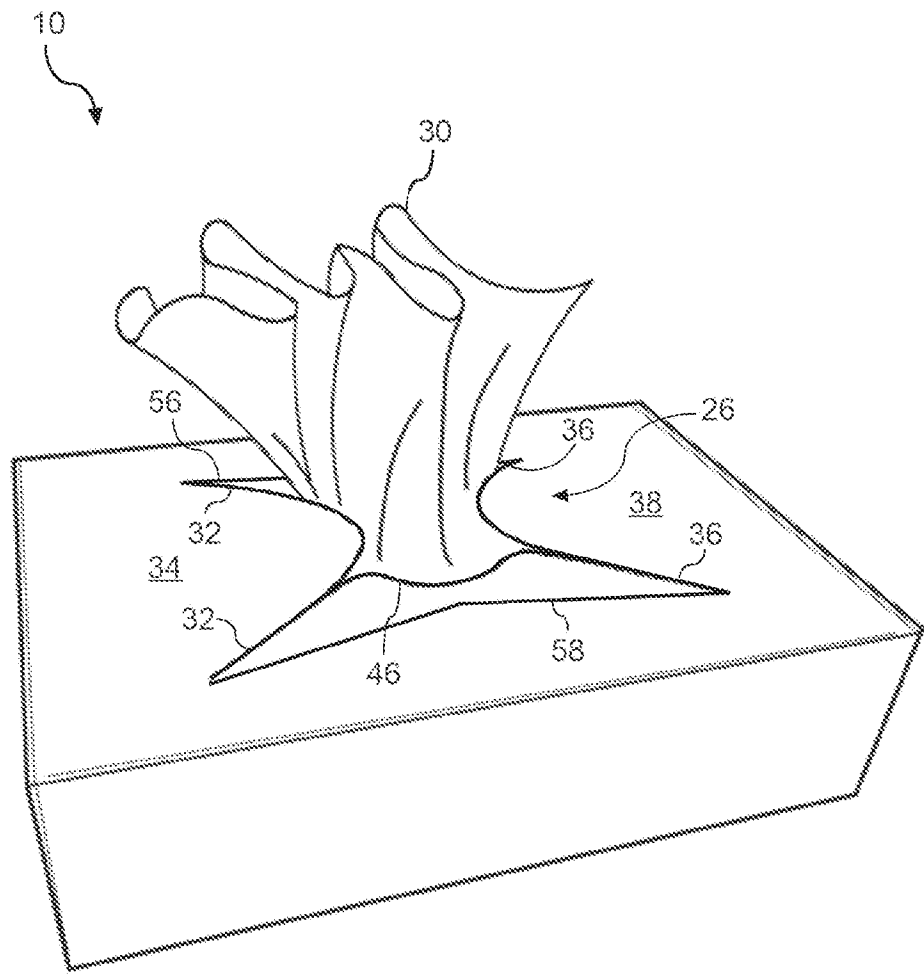


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2022/026726

A. CLASSIFICATION OF SUBJECT MATTER

A47K 10/20(2006.01)i; B65D 83/08(2006.01)i; B65D 5/06(2006.01)i; B65D 5/70(2006.01)i; A47K 10/42(2006.01)i

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)

A47K 10/20(2006.01); A47K 10/42(2006.01); B65D 83/08(2006.01); B65D 85/18(2006.01)

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: tissue dispenser, opening, flap, resilient edge, and paperboard

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2021-150207 A1 (KIMBERLY-CLARK WORLDWIDE, INC.) 29 July 2021 (2021-07-29) page 4, line 20 - page 7, line 31; claim 1; and figures 1-8	1,7-16
Y		2-6,17-25
Y	EP 0930243 A1 (ALBAAD MASSUOT YITZHAK LIMITED) 21 July 1999 (1999-07-21) paragraphs [0033]-[0036] and figures 1-5	2-6,17-25
X	KR 10-2001-0071177 A (THE PROCTER & GAMBLE COMPANY) 28 July 2001 (2001-07-28) paragraphs [0009]-[0015]; claim 6; and figures 1, 2	1,7-16
A	JP 2005-001720 A (TOPPAN PRINTING CO., LTD. et al.) 06 January 2005 (2005-01-06) paragraphs [0007]-[0013] and figures 1-6	1-25
A	US 2018-0022534 A1 (MCCORMICK, MICHAELA) 25 January 2018 (2018-01-25) paragraphs [0016]-[0025] and figures 1-6	1-25

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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“P” document published prior to the international filing date but later than the priority date claimed

“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

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

25 January 2023

Date of mailing of the international search report

25 January 2023

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon
35208, Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

PARK, Tae Wook

Telephone No. +82-42-481-3405

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/US2022/026726

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
WO	2021-150207	A1	29 July 2021	None			
EP	0930243	A1	21 July 1999	None			
KR	10-2001-0071177	A	28 July 2001	CA	2330098	A1	04 November 1999
				CA	2330098	C	29 June 2004
				CN	1144742	C	07 April 2004
				CN	1298361	A	06 June 2001
				DE	69904316	T2	02 October 2003
				EP	0953516	A1	03 November 1999
				EP	1075436	A1	14 February 2001
				EP	1075436	B1	04 December 2002
				JP	2002-534324	A	15 October 2002
				JP	4229592	B2	25 February 2009
				KR	10-0415026	B1	13 January 2004
				US	6419114	B1	16 July 2002
JP	2005-001720	A	06 January 2005	JP	4228083	B2	25 February 2009
US	2018-0022534	A1	25 January 2018	None			