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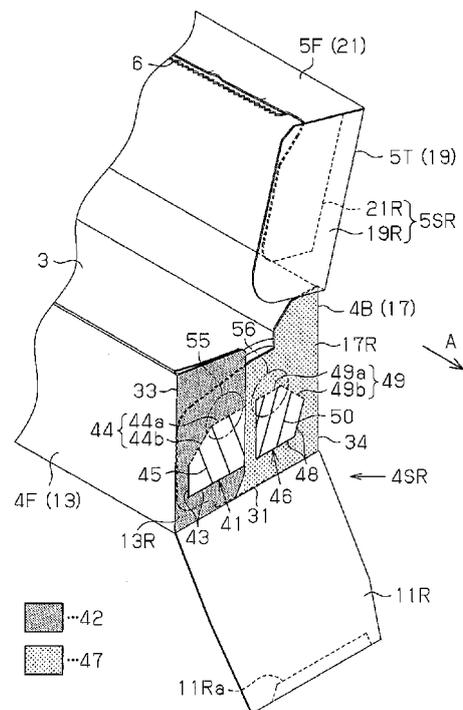
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(54) **CARTON AND WRAPPING OBJECT FEEDER**

(57) A wrapping object feeder 1 is provided with a roll 3 formed by winding a wrapping object 3F such as a wrapping film, and a carton 2 for housing the roll 3. The carton 2 is provided with a bottom wall 4BT, side walls 4F, 4B, and end walls 4SL, 4SR. Each end wall is formed by overlapping one of flaps 11 L, 11 R extending from the bottom wall 4BT onto one of flaps 13L, 13R extending from the side wall 4F and one of flaps 17L, 17R extending from the side wall 4B, and jointing the flaps using an adhesive agent. At least one of these flaps has a surface provided with a first region 41, 46 defined by a perforation line 44, 49 and a second region 42, 47 having a lower adhesive property to the adhesive agent than the first region, and is joined with another flap at the first region 41, 46. The adhesive agent 55, 56 on the flap having the perforation line 44, 49 is spread over the first region 41, 46 and the second region 42, 47 across the perforation line 44, 49.

**Fig.3**



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**Description**

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## TECHNICAL FIELD

## SUMMARY OF THE INVENTION

**[0001]** The present invention relates to a carton for housing a roll formed by winding a wrapping object such as a wrapping film, aluminum foil, and a cooking paper sheet, and a wrapping object feeder that uses such a carton.

5 Problems that the Invention is to Solve

## BACKGROUND ART

**[0002]** A carton for housing a roll formed by winding a wrapping object such as a wrapping film, aluminum foil, and a cooking paper sheet includes a carton main body, a lid body formed pivotally relative to and integrally with the carton main body, and a saw-toothed cutting blade mounted on the lid body for cutting the wrapping object that is pulled out from the inside the carton main body. The carton main body includes a bottom wall, a front wall and a back wall rising from mutually opposing two sides of the bottom wall, and a pair of left and right end walls rising from different mutually opposing two sides of the bottom wall. The left end wall is configured of three flaps respectively extending from the left ends of the bottom wall, the front wall, and the back wall. The right end wall is configured of three flaps respectively extending from the right ends of the bottom wall, the front wall, and the back wall. More specifically, each end wall is formed by bending a back flap as the flap extending from the back wall, a front flap as the flap extending from the front wall, and a bottom flap as the flap extending from the bottom wall, in that order, toward the inside of the carton main body, and thereafter bonding the front flap and the back flap with the bottom flap using an adhesive agent applied to the front flap and the back flap.

**[0005]** In the process of applying the adhesive agent to the flaps or the process of mutually bonding the flaps, more often than not, the adhesive agent runs off from the predetermined region provided with the half-cut line of the front flap and the back flap. Since the front flap and the back flap are bonded with the bottom flap also at regions other than at the predetermined region, a greater force will be consequently required for peeling the flaps apart. This run-off of the adhesive agent also causes the variation per carton with respect to the force that is required for peeling the flaps apart. In order to prevent the increase of force required for peeling the flaps apart caused by the run-off of the adhesive agent, considered may be providing a half-cut line to regions other than the predetermined region of the front flap and the back flap. Nevertheless, as more half-cut lines are provided, the strength of the flaps will deteriorate.

**[0006]** Accordingly, it is an objective of the present invention to provide a carton capable of favorably controlling the force required for peeling apart the flaps that are mutually overlapped and bonded at the end walls of the carton, and a wrapping object feeder including the foregoing carton.

## Means for Solving the Problems

**[0003]** Meanwhile, a spent carton after the wrapping film has been exhausted is normally collected as used paper and subsequently recycled. In the foregoing case, in addition to removing the cutting blade that is mounted on the lid body of the carton, the act of peeling apart the flaps that are mutually bonded at the respective end walls of the carton main body and then flattening the carton in order to reduce the volume of the carton is generally performed. In order to facilitate such an act of crushing the carton, Patent Document 1 describes providing a half-cut line at the region of the flaps to which an adhesive agent is applied. According to this configuration, based on the delamination that occurs in the flaps provided with the half-cut line when peeling the flaps apart, the carton can be crushed easily since the force required for peeling the flaps apart is reduced.

**[0007]** To achieve the above objective, the first aspect of the present invention provides a carton including a bottom wall, a pair of side walls provided at the front and back of the bottom wall, and a pair of end walls provided at the left and right of the bottom wall. Each of the end walls is formed by overlapping a flap extending from one end of either a left end or a right end of the bottom wall onto two flaps each extending from the same end of either a left end or a right end of one of the side walls, and joining the flaps using an adhesive agent. At least one of the flaps includes a surface having a first region and a second region, and is joined with another flap at the first region. The first region is defined by a perforation line, and the second region has an adhesive property to the adhesive agent lower than that of the first region. The adhesive agent is spread over the first region and the second region across the perforation line.

**[0008]** The first region may be defined by a half-cut line in addition to the perforation line. Preferably, the perforation line is, in comparison to the half-cut line, positioned toward a tip of the outermost flap of the end wall including a flap having the perforation line.

**[0009]** Preferably, an extended line of the half-cut line intersects an extended line of a ruled line defining a proximal end of the flap having that half-cut line.

**[0010]** Preferably, the perforation line is a polygonal

## PRIOR ART DOCUMENT

**[0004]**

Patent Document 1: Japanese Laid-Open Patent

line.

**[0011]** A second half-cut line may be provided inside the first region. Preferably, the second half-cut line is a straight line extending toward the proximal end of the outermost flap of the end wall, with a point on the perforation line as a starting point.

**[0012]** The outermost flap of the end wall may be a flap extending from the bottom wall. In this case, the flap having the first region and the second region is a flap extending from the side wall.

**[0013]** According to the second aspect of the present invention, a wrapping object feeder is provided, which includes a roll formed by winding a wrapping object, and the carton according to the above first aspect.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### **[0014]**

Fig. 1 is a perspective view of a wrapping object feeder according to a first embodiment of the present invention, illustrating a state before being opened;

Fig. 2 is a diagram viewing, from the upper side, a paper board that is obtained by developing a carton provided in the wrapping object feeder of the first embodiment;

Fig. 3 is an exploded perspective view of an end wall of the carton of the first embodiment;

Fig. 4 is a schematic view showing the positional relationship of the adhesive region of the front flap and the back flap relative to the bottom flap when viewing the end wall of the first embodiment in the central axis direction of the roll of the wrapping object;

Figs. 5(a) to 5(c) are cross-sectional views of the end wall of the first embodiment, and more specifically Fig. 5(a) is a diagram showing a state before peeling the bottom flap from the front flap and the back flap, Fig. 5(b) is a diagram showing a state immediately after starting the peeling of the bottom flap from the front flap and the back flap, and Fig. 5(c) is a diagram showing a state where the bottom flap has been peeled from the front flap and the back flap; and

Fig. 6 is a schematic view of an end wall of a carton according to a second embodiment of the present invention, mainly showing the front flap and the back flap.

#### MODES FOR CARRYING OUT THE INVENTION

(First Embodiment)

**[0015]** A carton and a wrapping object feeder accord-

ing to a first embodiment of the present invention will now be described with reference to Figs. 1 to 5.

**[0016]** As shown in Fig. 1, the wrapping object feeder 1 of this embodiment is configured of a rectangular carton 2 formed by bending a paper board such as a coated paper board, and a roll 3 formed by winding a wrapping film 3F, which is a wrapping object made of polyvinylidene chloride or the like, around a paper core 3C. The carton 2 includes a carton main body 4 formed in a bottomed box shape with an open top face for internally housing the roll 3, and a lid body 5 for opening and closing the opening of the carton main body 4. The lid body 5 is provided with a cutting blade 6.

**[0017]** The carton main body 4 includes a bottom wall 4BT, a front wall 4F and a back wall 4B as a pair of side walls provided at the front and back of the bottom wall 4BT, and a pair of end walls 4SL, 4SR provided at the left and right of the bottom wall 4BT.

**[0018]** The lid body 5 includes a top wall 5T formed pivotally relative to and integrally with the back wall 4B of the carton main body 4, a lid body front wall 5F extending from the front end of the top wall 5T, and lid body end walls 5SL, 5SR extending from the left and right ends of the top wall 5T. The lid body front wall 5F is positioned opposite to the front wall 4F of the carton main body 4 when the opening of the carton main body 4 is closed by the lid body 5. The lid body front wall 5F is bonded with the front wall 4F of the carton main body 4 at a plurality of adhesion points 4Fc positioned near the bottom wall 4BT of the carton main body 4. The adhesion points 4Fc are provided between the front wall 4F of the carton main body 4 and the lid body front wall 5F at equal intervals in a central axis direction A, which is a direction that is parallel to the central axis of the roll 3. A tear perforation line 5Fm extending from the left end to the right end of the lid body front wall 5F is provided at substantially the center in the vertical direction of the lid body front wall 5F. Thus, the lid body front wall 5F will be cut substantially in the central axis direction A by the perforation line 5Fm. The perforation line 5Fm extends substantially in a V-shape, and the apex of this substantial V-shape is positioned at the center of the lid body front wall 5F in the central axis direction A and is facing downward. An opening end 5E for facilitating the start of cutting of the lid body front wall 5F along the perforation line 5Fm is provided in a portion of the lid body front wall 5F, which corresponds to the lower right end of the perforation line 5Fm.

**[0019]** As a result of holding the opening end 5E and peeling the portion of the lid body front wall 5F that is lower than the perforation line 5Fm from the front wall 4F against its bonding with the front wall 4F of the carton main body 4 at the adhesion points 4Fc, the lid body front wall 5F is cut along the perforation line 5Fm from the right end toward the left end. As a result of cutting the lid body front wall 5F along the perforation line 5Fm, the lower portion of the lid body front wall 5F is severed from an upper portion, which is the portion of the lid body front

wall 5F that is above the perforation line 5Fm and continuous from the top wall 5T. The carton 2 is thereby opened. The lower end of the upper portion of the lid body front wall 5F after being severed from the lower portion extends substantially in a V-shape as with the perforation line 5Fm, and the apex of this substantial V-shape is positioned at the center of the lid body front wall 5F in the central axis direction A and is facing downward. By cutting the lid body front wall 5F along the perforation line 5Fm and thereafter pivoting the lid body 5 so that the top wall 5T becomes separated from the front wall 4F of the carton main body 4, the wrapping film 3F becomes ready for being pulled out from the inside of the carton 2.

**[0020]** The cutting blade 6 is mounted by being bonded to the inner surface of the lid body front wall 5F. The cutting blade 6 extends over the entire lid body front wall 5F with respect to the central axis direction A, and is positioned in correspondence with the perforation line 5Fm. The cutting blade 6 has a substantial V-shape as with the perforation line 5Fm. The apex of the substantial V-shape of the cutting blade 6 is positioned at the center of the cutting blade 6 in the central axis direction A and is facing downward. As a result of using the substantially V-shaped cutting blade 6, the cutting blade 6 first pierces the wrapping film 3F, which has been pulled out from the inside of the carton main body 4 and placed on the front wall 4F, at the center of the cutting blade 6 in the central axis direction A. Thus, the wrapping film 3F is cut from the center toward both ends of the wrapping film 3F in the central axis direction A.

**[0021]** A plurality of front face projections FP protruding from the outer surface of the lid body front wall 5F toward the front are provided at the center of the lid body front wall 5F in the central axis direction A among the portion of the lid body front wall 5F that is above the cutting blade 6. The front face projections FP are used for allowing the user, who touches the front face projections FP, to tactually grasp the location of the center of the lid body front wall 5F in the central axis direction A. That is, the center of the cutting blade 6 in the central axis direction A which should first pierce the wrapping film 3F when cutting the wrapping film 3F with the cutting blade 6. It is thereby possible to guide the user to cut the wrapping film 3F based on a method that is suitable for the shape of the cutting blade 6, which forms a substantial V-shape. The front face projections FP are preferably embossed. The formation of the embossed front face projections FP is performed by pressing and pushing out a part of the upper face of the portion of the paper board from the back side thereof corresponding to the lid body front wall 5F or affixing special ink to the upper face of this paper board portion during or after the cutting of the paper board such as a coated paper board in the course of forming the carton 2.

**[0022]** When cutting the wrapping film 3F, first, the lid body 5 of the carton 2 is opened, the tip of the wrapping film 3F is held with one hand, and the wrapping film 3F is pulled outside the carton main body 4 through the open-

ing of the carton main body 4. The opening is then closed with the lid body 5, and the wrapping film 3F, which has been pulled out, is sandwiched between the lid body front wall 5F and the front wall 4F of the carton main body 4.

Subsequently, the carton 2 is twisted in the circumferential direction R of the roll 3 while pressing the front face projections FP with the thumb of the other hand holding the carton 2. The teeth at the center of the cutting blade 6 in the central axis direction A thereby pierce the wrapping film 3F. Thereafter, by further twisting the carton 2, the wrapping film 3F is cut in the central axis direction A. In other words, the cutting blade 6 cuts the wrapping film 3F from the center toward both ends of the wrapping film 3F in the central axis direction A. Consequently, the cutting of the wrapping film 3F by the cutting blade 6 will progress favorably according to the shape of the cutting blade 6 without causing any cutting defects such as tearing.

**[0023]** The carton 2 will now be described in further detail with reference to Figs. 2 and 3. In relation to Fig. 2, which is a development diagram of the carton 2, the left and right direction in Fig. 2 is also referred to as the central axis direction A for the sake of convenience.

**[0024]** The paper board shown in Fig. 2 is obtained by developing the carton 2, and includes a bottom wall portion 11 corresponding to the bottom wall 4BT of the carton main body 4. The paper board of Fig. 2 includes a front wall portion 13, which is positioned above the bottom wall portion 11 as viewed in Fig. 2 and corresponds to the front wall 4F of the carton main body 4. The front wall portion 13 is connected to the bottom wall portion 11 via a ruled line 12 extending in the central axis direction A. The front wall portion 13 is bent at the ruled line 12 toward the reverse-side face (face of the side that is not shown in Fig. 2) and not toward the upper face (face of the side that is shown in Fig. 2) of the bottom wall portion 11 until the angle that it forms with the bottom wall portion 11 becomes a right angle. A plurality of protrusions 13a are arranged in the central axis direction A at a position near the bottom wall portion 11 within the front wall portion 13. The protrusions 13a protrude from the upper face of the front wall portion 13, and partially configure the foregoing adhesion points 4Fc. The paper board of Fig. 2 includes a sub-front wall portion 15, which is positioned above the front wall portion 13 as viewed in Fig. 2. The sub-front wall portion 15 corresponds to a sub-front wall 4Fd of the carton main body 4, which serves to line the front wall 4F. The sub-front wall portion 15 is connected to the front wall portion 13 via a ruled line 14 extending in the central axis direction A. The sub-front wall portion 15 is bent at the ruled line 14 toward the reverse-side face of the front wall portion 13 until the reverse-side face of the sub-front wall portion 15 comes into contact with the reverse-side face of the front wall portion 13.

**[0025]** The paper board of Fig. 2 includes a back wall portion 17, which is positioned below the bottom wall portion 11 as viewed in Fig. 2 and corresponds to the back wall 4B of the carton main body 4. The back wall portion

17 is connected to the bottom wall portion 11 via a ruled line 16 extending in the central axis direction A. The back wall portion 17 is bent at the ruled line 16 toward the reverse-side face of the bottom wall portion 11 until the angle that it forms with the bottom wall portion 11 becomes a right angle. The paper board of Fig. 2 includes a top wall portion 19, which is positioned below the back wall portion 17 as viewed in Fig. 2 and corresponds to the top wall 5T of the lid body 5. The top wall portion 19 is connected to the back wall portion 17 via a ruled line 18 extending in the central axis direction A. The top wall portion 19 is bent at the ruled line 18 toward the reverse-side face of the back wall portion 17 until the angle that it forms with the back wall portion 17 becomes a right angle.

**[0026]** The paper board of Fig. 2 includes a lid body front portion 21, which is positioned below the top wall portion 19 as viewed in Fig. 2 and corresponds to the lid body front wall 5F of the carton 2. The lid body front portion 21 is connected to the top wall portion 19 via a ruled line 20 extending in the central axis direction A. The foregoing V-shaped perforation line 5Fm is formed on the lid body front portion 21. The foregoing V-shaped cutting blade 6 (not shown in Fig. 2) is bonded and mounted on the reverse-side face of the lid body front portion 21 along the perforation line 5Fm. The foregoing front face projections FP are provided at a position that is the center of the lid body front portion 21 in the central axis direction A and is above the perforation line 5Fm as viewed in Fig. 2. A plurality of semicircular cuts 21 a, which configure the adhesion points 4Fc together with the protrusions 13a, are aligned in the central axis direction A at a position that is below the perforation line 5Fm as viewed in Fig. 2 and corresponds to the protrusions 13a of the front wall portion 13. The foregoing opening end 5E is provided in a portion of the lid body front portion 21 that is positioned at the lower right end of the perforation line 5Fm as viewed in Fig. 2. The lid body front portion 21 is bent at the ruled line 20 toward the reverse-side face of the top wall portion 19 until the angle that it forms with the top wall portion 19 becomes a right angle. When the front wall portion 13, the sub-front wall portion 15, the back wall portion 17, the top wall portion 19, and the lid body front portion 21 are all bent as described above, the reverse-side face of the lid body front portion 21 will oppose the upper face of the front wall portion 13, and the reverse-side face of the lid body front portion 21 becomes ready for being bonded to the upper face of the front wall portion 13.

**[0027]** In the ensuing description, the size of the respective members related to the vertical direction in Fig. 2 is referred to as the vertical length, and the size related to the horizontal direction in Fig. 2 is referred to as the horizontal length.

**[0028]** The paper board of Fig. 2 includes bottom flaps 11 L, 11 R, which are positioned left and right of the bottom wall portion 11, respectively, as viewed in Fig. 2. The bottom flaps 11 L, 11 R partially configure the respective

end walls 4SL, 4SR of the carton main body 4. Each bottom flap 11 L, 11 R is connected to the bottom wall portion 11 via a ruled line 31 extending orthogonally to the central axis direction A. The bottom flaps 11 L, 11 R are bent at the respective ruled lines 31 toward the reverse-side face of the bottom wall portion 11. The vertical length of the bottom flaps 11 L, 11 R is substantially equal to the vertical length of the bottom wall portion 11. The horizontal length of the bottom flaps 11 L, 11 R is substantially equal to the vertical length of the front wall portion 13 and the back wall portion 17.

**[0029]** An extension part 11 La, 11 Ra is connected to the tip of each bottom flap 11 L, 11 R via a ruled line 32 extending orthogonally to the central axis direction A. The extension parts 11 La, 11 Ra are bent at the respective ruled lines 32 so that the upper faces of the extension parts 11 La, 11 Ra face the upper faces of the respective bottom flaps 11 L, 11 R.

**[0030]** The paper board of Fig. 2 includes front flaps 13L, 13R, which are positioned left and right of the front wall portion 13, respectively, as viewed in Fig. 2. The front flaps 13L, 13R partially configure the respective end walls 4SL, 4SR of the carton main body 4. Each front flap 13L, 13R is connected to the front wall portion 13 via a ruled line 33 extending orthogonal to the central axis direction A. The front flaps 13L, 13R are bent at the respective ruled lines 33 toward the reverse-side face of the front wall portion 13. The vertical length of the front flaps 13L, 13R is substantially equal to the vertical length of the front wall portion 13. The horizontal length of the front flaps 13L, 13R is shorter than the vertical length of the bottom wall portion 11. The upper face of each front flap 13L, 13R includes an adhesive region 41 having a relatively high adhesive property (i.e., affinity) with the adhesive agent and a non-adhesive region 42 having a relatively low adhesive property with the adhesive agent. In Figs. 2 and 3, the adhesive region 41 is shown as a white background in the upper face of the front flap 13L, 13R, and the non-adhesive region 42 is shown as a shaded background in the upper face of the front flap 13L, 13R.

**[0031]** The adhesive region 41 of each front flap 13L, 13R is defined by a half-cut line 43 and a perforation line 44. The half-cut line 43 and the perforation line 44 of the front flap 13L, 13R are contained in the adhesive region 41 of the front flap 13L, 13R. The half-cut line 43 is a continuous cut line formed by cutting into one of the front flaps 13L, 13R from the upper side to the middle of the thickness direction. The depth of the cut of the half-cut line 43 is preferably 10% to 90%, and more preferably 30% to 80% of the thickness of the paper board. The perforation line 44 is a line in which cuts penetrating one of the front flaps 13L, 13R are aligned discontinuously. As evident from Fig. 3, which is a partially exploded view of the end wall 4SR of the carton main body 4, at each end wall 4SL, 4SR of the carton main body 4, the half-cut line 43 of the front flap 13L, 13R is, in comparison to the perforation line 44 of the front flap 13L, 13R, positioned near the proximal end and not near the tip of the

bottom flap 11 L, 11 R, that is, positioned near the side of the front flap 13L, 13R that is closest to the bottom wall 4BT of the carton main body 4. In other words, the perforation line 44 of the front flap 13L, 13R is, in comparison to the half-cut line 43 of the front flap 13L, 13R, positioned near the tip of the bottom flap 11 L, 11 R, that is, positioned near the side of the front flap 13L, 13R that is farthest from the bottom wall 4BT.

**[0032]** The perforation line 44 is a polygonal line, which is configured of a flat part 44a extending in a direction that is orthogonal to the ruled line 33 and an inclined part 44b extending in a direction that intersects obliquely with the ruled line 33. The proportion of the length of the cut portion of the perforation line 44 to the length of the non-cut portion is preferably one part to four to four parts to one, and preferably one part to three. At each end wall 4SL, 4SR of the carton main body 4, the flat part 44a of the perforation line 44 of the front flap 13L, 13R extends in a direction that is orthogonal to the line connecting the proximal end and tip of the bottom flap 11 L, 11 R, that is, extends parallel to the bottom wall 4BT of the carton main body 4. In the inclined part 44b of the perforation line 44 of the front flap 13L, 13R, one end of the inclined part 44b that is separated from the flat part 44a is, in comparison to the other end of the inclined part 44b that is continuous with the flat part 44a, positioned near the proximal end of the bottom flap 11 L, 11 R, that is, positioned near the side of the front flap 13L, 13R that is closest to the bottom wall 4BT.

**[0033]** One or more half-cut lines 45 are provided in the adhesive region 41 of each front flap 13L, 13R. As with the half-cut line 43 described above, the half-cut line 45 is a continuous cut line formed by cutting into the adhesive region 41 of one of the front flaps 13L, 13R from the upper side to the middle of the thickness direction. The adhesive region 41 is divided into a plurality of portions by the one or more half-cut lines 45. The depth of the cut of the half-cut line 45 is preferably 10% to 90%, and more preferably 30% to 80% of the thickness of the paper board. At each end wall 4SL, 4SR of the carton main body 4, the one or more half-cut lines 45 of the front flap 13L, 13R extend toward the proximal end of the bottom flap 11 L, 11 R, that is, extend at a slant toward the side of the front flap 13L, 13R that is closest to the bottom wall 4BT, with a point on the perforation line 44 of the front flap 13L, 13R as the starting point.

**[0034]** The non-adhesive region 42 of each front flap 13L, 13R is provided around the adhesive region 41 of the front flap 13L, 13R. Paint is applied to the non-adhesive region 42, for example, in order to limit the adhesive property with the adhesive agent. As a specific example of this kind of paint, for example, UV-curable acrylate resin or polyamide resin may be used. The thickness of the paint applied on the non-adhesive region 42 is preferably 0.1  $\mu\text{m}$  to 4  $\mu\text{m}$ , and more preferably 0.5  $\mu\text{m}$  to 2  $\mu\text{m}$ . Preferably, the non-adhesive region 42 of each front flap 13L, 13R covers the whole upper face of the front flap 13L, 13R excluding the adhesive region 41.

**[0035]** The paper board of Fig. 2 includes back flaps 17L, 17R, which are positioned left and right of the back wall portion 17, respectively, as viewed in Fig. 2. The back flaps 17L, 17R configure the respective end walls 4SL, 4SR of the carton main body 4 together with the respective bottom flaps 11 L, 11 R and the respective front flaps 13L, 13R. Each back flap 17L, 17R is connected to the back wall portion 17 via a ruled line 34 extending orthogonal to the central axis direction A. The back flaps 17L, 17R are bent at the ruled lines 34 toward the reverse-side face of the back wall portion 17. The vertical length of the back flaps 17L, 17R is gradually reduced toward the tips of the respective back flaps 17L, 17R. The horizontal length of the back flaps 17L, 17R is shorter than the vertical length of the bottom wall portion 11, and is longer than the horizontal length of the respective front flaps 13L, 13R. The upper face of each back flap 17L, 17R includes an adhesive region 46 having a relatively high adhesive property with the adhesive agent and a non-adhesive region 47 having a relatively low adhesive property with the adhesive agent. In Figs. 2 and 3, the non-adhesive region 47 is shown as a shaded background in the upper face of the back flap 17L, 17R, and the adhesive region 46 is shown as a white background that is enclosed by the non-adhesive region 47 in the upper face of the back flap 17L, 17R.

**[0036]** As with the adhesive regions 41 of the front flaps 13L, 13R, the adhesive region 46 of each back flap 17L, 17R is defined by a half-cut line 48 and a perforation line 49. The half-cut line 48 and the perforation line 49 of the back flap 17L, 17R are contained in the adhesive region 41 of the back flap 17L, 17R. The half-cut line 48 is a continuous cut line formed by cutting into one of the back flaps 17L, 17R from the upper side to the middle of the thickness direction. The depth of the cut of the half-cut line 48 is preferably 10% to 90%, and more preferably 30% to 80% of the thickness of the paper board. The perforation line 49 is a line in which cuts penetrating one of the back flaps 17L, 17R are aligned discontinuously. At each end wall 4SL, 4SR of the carton main body 4, most of the half-cut line 48 of the back flap 17L, 17R is, in comparison to the perforation line 49 of the back flap 17L, 17R, positioned near the proximal end and not near the tip of the bottom flap 11L, 11R, that is, positioned near the side of the back flap 17L, 17R that is closest to the bottom wall 4BT. In other words, the perforation line 49 of the back flap 17L, 17R is, in comparison to the half-cut line 48 of the back flap 17L, 17R, positioned near the tip of the bottom flap 11L, 11R, that is, positioned near the side of the back flap 17L, 17R that is farthest from the bottom wall 4BT.

**[0037]** The perforation line 49 is a polygonal line, which is configured of a flat part 49a extending in a direction that is orthogonal to the ruled line 34 and an inclined part 49b extending in a direction that intersects obliquely with the ruled line 34. At each end wall 4SL, 4SR of the carton main body 4, the flat part 49a of the perforation line 49 of the back flap 17L, 17R extends in a direction that is

orthogonal to the line connecting the proximal end and tip of the bottom flap 11 L, 11 R, that is, extends parallel to the bottom wall 4BT of the carton main body 4. In the inclined part 49b of the perforation line 49 of the back flap 17L, 17R, one end of the inclined part 49b that is separated from the flat part 49a is, in comparison to the other end of the inclined part 49b that is continuous with the flat part 49a, positioned near the proximal end of the bottom flap 11 L, 11 R, that is, positioned near the side of the back flap 17L, 17R that is closest to the bottom wall 4BT.

**[0038]** One or more half-cut lines 50 are provided in the adhesive region 46 of each back flap 17L, 17R. As with the half-cut line 48 described above, the half-cut line 50 is a continuous cut line formed by cutting into the adhesive region 46 of one of the back flaps 17L, 17R from the upper side to the middle of the thickness direction. The adhesive region 46 is divided into a plurality of portions by the one or more half-cut lines 50. The depth of the cut of the half-cut line 50 is preferably 10% to 90%, and more preferably 30% to 80% of the thickness of the paper board. At each end wall 4SL, 4SR of the carton main body 4, the one or more half-cut lines 50 of the back flap 17L, 17R extend toward the proximal end of the bottom flap 11 L, 11 R, that is, extend toward the side of the back flap 17L, 17R that is closest to the bottom wall 4BT, with a point on the perforation line 49 of the back flap 17L, 17R as the starting point.

**[0039]** The non-adhesive region 47 of each back flap 17L, 17R is provided around the adhesive region 46 of the back flap 17L, 17R. Paint is applied to the non-adhesive region 47, for example, in order to limit the adhesive property with the adhesive agent. Although the non-adhesive region 47 of each back flap 17L, 17R is not provided on the upper face of the tip portion of the back flap 17L, 17R, the non-adhesive region 47 preferably covers the whole upper face of the proximal end portion of the back flap 17L, 17R excluding the adhesive region 41.

**[0040]** The paper board of Fig. 2 includes lid body top flaps 19L, 19R, which are positioned left and right of the top wall portion 19, respectively, as viewed in Fig. 2. Each lid body top flap 19L, 19R is connected to the top wall portion 19 via a ruled line 35 extending orthogonal to the central axis direction A. The vertical length of the lid body top flaps 19L, 19R is substantially equal to the vertical length of the top wall portion 19. The horizontal length of the lid body top flaps 19L, 19R is shorter than the vertical length of the front wall portion 13.

**[0041]** The paper board of Fig. 2 includes lid body front flaps 21 L, 21 R, which are positioned left and right of the lid body front portion 21, respectively, as viewed in Fig. 2. Each lid body front flap 21 L, 21R is connected to the lid body front portion 21 at a position above the perforation line 5Fm as viewed in Fig. 2 via a ruled line 36 extending orthogonal to the central axis direction A. The horizontal length of the lid body front flaps 21 L, 21 R is shorter than the vertical length of the top wall portion 19. In the wrapping object feeder 1, the lid body top flaps

19R, 19L and the lid body front flaps 21 R, 21 L are mutually overlapped and bonded with an adhesive agent such that the lid body front flaps 21R, 21L are positioned inward of the respective lid body top flaps 19R, 19L. The lid body end walls 5SR, 5SL are thereby formed by the respective lid body top flaps 19R, 19L and the respective lid body front flaps 21 R, 21 L. When the lid body 5 is rotated around the ruled line 18 in order to open or close the opening of the carton main body 4, the extension parts 11La, 11 Ra of the bottom flaps 11 L, 11 R engage with and disengage from the respective lid body front flaps 21 L, 21 R. When the opening of the carton main body 4 is closed by the lid body 5, the extension parts 11La, 11Ra of the bottom flaps 11 L, 11 R engage with the respective lid body front flaps 21L, 21R to generate a clicking sound, and consequently the lid body 5 becomes latched with the carton main body 4.

**[0042]** Fall-out prevention pieces 15L, 15R for preventing the roll 3 housed in the carton 2 from falling out from the opening of the carton main body 4 are provided in the sub-front wall portion 15 of the paper board of Fig. 2. Each fall-out prevention piece 15L, 15R extends from one of the left and right ends of the sub-front wall portion 15 as viewed in Fig. 2 at a position close to the front wall portion 13. In the carton 2, the fall-out prevention pieces 15L, 15R protrude toward the inside of the carton main body 4 as a result of being bent at ruled lines 37, and engage with the respective ends of the roll 3 in the carton main body 4. Thus, it is possible to prevent the roll 3 from falling out of the carton main body 4.

**[0043]** The end walls 4SL, 4SR of the carton main body 4 will now be described in further detail with reference to Figs. 4 and 5 in addition to Fig. 3.

**[0044]** As shown in Fig. 3, the end wall 4SR is formed by overlapping the bottom flap 11 R with the front flap 13R and the back flap 17R and bonding these flaps using an adhesive agent. Similarly, the end wall 4SL is formed by overlapping the bottom flap 11L with the front flap 13L and the back flap 17L and bonding these flaps using an adhesive agent. The front flaps 13L, 13R and the back flaps 17L, 17R are mutually overlapped such that the tip portion of the back flaps 17L, 17R is positioned inward of the carton main body 4 than the respective front flaps 13L, 13R. The adhesive agent that is used for bonding the front flaps 13L, 13R to the bottom flaps 11 L, 11R is applied on the front flaps 13L, 13R and is thereafter spread as a result of overlapping the front flaps 13L, 13R and the bottom flaps 11 L, 11 R. Consequently, the adhesive agent is spread over the adhesive region 41 and the non-adhesive region 42 of each front flap 13L, 13R across the perforation line 44. Each front flap 13L, 13R is bonded to the bottom flap 11 R by an adhesive agent mass 55 on the front flaps 13L, 13R. The adhesive agent that is used for bonding the back flaps 17L, 17R to the bottom flaps 11 L, 11 R is applied on the back flaps 17L, 17R, and is thereafter spread as a result of overlapping the back flaps 17L, 17R and the bottom flaps 11 L, 11 R. Consequently, the adhesive agent is spread over the ad-

hesive region 46 and the non-adhesive region 47 of each back flap 17L, 17R across the perforation line 49. Each back flap 17L, 17R is bonded to the bottom flap 11 R by an adhesive agent mass 56 on the back flaps 17L, 17R.

**[0045]** As shown in Fig. 4, at each end wall 4SL, 4SR of the carton main body 4, the perforation line 44 of the front flap 13L, 13R and the perforation line 49 of the back flap 17L, 17R are positioned near the tip and not near the proximal end of the bottom flap 11 L, 11 R, which is at the outermost position at the end wall 4SL, 4SR. That is, each of the perforation line 44 and the perforation line 49 is positioned near one of the sides of the front flap 13L, 13R and the back flap 17L, 17R that are farthest from the bottom wall 4BT. The flat part 44a of the perforation line 44 and the flat part 49a of the perforation line 49 are mutually positioned on the same straight line. Each flat part 44a, 49a extends in a direction that is orthogonal to the line connecting the proximal end and tip of the bottom flap 11 L, 11 R to each other, that is, extends along arrow X in Fig. 4 extending parallel to the bottom wall 4BT of the carton main body 4, or to put it differently, extends along the ruled line 31 of the bottom flap 11 L, 11 R. Arrow Z in Fig. 4 represents a direction that is parallel to the line connecting the proximal end and tip of each bottom flap 11 L, 11 R. Each of the inclined part 44b of the perforation line 44 and the inclined part 49b of the perforation line 49 extends toward the proximal end of one of the bottom flaps 11 L, 11 R, that is, extends at a slant toward one of the sides of the front flaps 13L, 13R and the back flaps 17L, 17R that are closest to the bottom wall 4BT, with one end of one of the flat parts 44a, 49a as the starting point. The one or more half-cut lines 45 in the adhesive region 41 of each front flap 13L, 13R extend toward the proximal end of one of the bottom flaps 11 L, 11 R, that is, extend at a slant toward the side of the front flap 13L, 13R that is closest to the bottom wall 4BT, with a point on the perforation line 44 of the front flap 13L, 13R as the starting point. The ending point (point that is not positioned on the perforation line 44) of each half-cut line 45 is, in comparison to the starting point (point that is positioned on the perforation line 44) of the half-cut line 45, positioned near an imaginary line CL extending between the adhesive region 41 of one of the front flaps 13L, 13R and the adhesive region 46 of one of the back flaps 17L, 17R in the direction represented by the arrow Z in Fig. 4. The one or more half-cut lines 50 in the adhesive region 46 of each back flap 17L, 17R extend toward the proximal end of one of the bottom flaps 11L, 11R, that is, extend at a slant toward the side of the back flap 17L, 17R that is closest to the bottom wall 4BT, with a point on the perforation line 49 of the back flap 17L, 17R as the starting point. The ending point (point that is not positioned on the perforation line 49) of each half-cut line 50 is, in comparison to the starting point (point that is positioned on the perforation line 49) of the half-cut line 50, positioned near the imaginary line CL.

**[0046]** As shown in Fig. 5(a), when crushing the carton 2, the peeling away of the flaps that are mutually bonded

at each end wall 4SL, 4SR of the carton main body 4 is performed by pulling the tip of the bottom flap 11 L, 11 R in the direction of the arrow in Fig. 5(a) with an index finger or the like. The portion of the adhesive agent 55 that is located on the adhesive region 41 of each front flap 13L, 13R functions to bond the front flap 13L, 13R to one of the bottom flaps 11 L, 11 R, but the portion of the adhesive agent 55 that is located on the non-adhesive region 42 does not have such a function. Similarly, the portion of the adhesive agent 56 that is located on the adhesive region 46 of each back flap 17L, 17R functions to bond the back flaps 17L, 17R to one of the bottom flaps 11 L, 11 R, but the portion of the adhesive agent 56 that is located on the non-adhesive region 47 does not have such a function. Thus, little force is required for peeling each bottom flap 11 L, 11 R; specifically, the portion extending from the tip of the bottom flap 11 L, 11 R to a point corresponding to the perforation lines 44, 49, from one of the front flaps 13L, 13R and one of the back flaps 17L, 17R. A certain degree of force is required when further peeling the bottom flap 11 L, 11 R, which is in the state shown in Fig. 5(b), from the front flap 13L, 13R and the back flap 17L, 17R.

**[0047]** As shown in Fig. 5(c), when each bottom flap 11 L, 11 R that is bonded with one of the front flaps 13L, 13R with the adhesive agent 55 on the front flap 13L, 13R is peeled from the front flap 13L, 13R, the delamination of the front flap 13L, 13R occurs from the flat part 44a of the perforation line 44 to the half-cut line 43; that is, at the adhesive region 41. However, since the upper face of the front flap 13L, 13R is severed by the half-cut line 43, the delamination of the front flap 13L, 13R does not extend into the non-adhesive region 42 by exceeding the half-cut line 43. Similarly, when each bottom flap 11 L, 11 R that is bonded with one of the back flaps 17L, 17R with the adhesive agent 56 on the back flap 17L, 17R is peeled from the back flap 17L, 17R, the delamination of the back flap 17L, 17R occurs from the flat part 49a of the perforation line 49 to the half-cut line 48; that is, at the adhesive region 46. However, since the upper face of the back flap 17L, 17R is severed by the half-cut line 48, the delamination of the back flap 17L, 17R does not extend into the non-adhesive region 47 by exceeding the half-cut line 48.

**[0048]** Unlike the half-cut line 43, the perforation line 44 of each front flap 13L, 13R does not completely sever the upper face of the front flap 13L, 13R. Thus, when each bottom flap 11 L, 11 R is peeled from the front flap 13L, 13R as shown in Figs. 5(a) to 5(c), while the delamination of the front flap 13L, 13R is started easily at the cut portion of the perforation line 44, the delamination is not started easily at the non-cut portion of the perforation line 44. By suitably changing the spacing of the cut portions of the perforation line 44, the force required for peeling the bottom flap 11 L, 11 R from the front flap 13L, 13R can be adjusted. Similarly, the perforation line 49 of each back flap 17L, 17R does not completely sever the upper face of the back flap 17L, 17R. Therefore, while

the delamination of the back flap 17L, 17R is started easily at the cut portion of the perforation line 49, the delamination is not started easily at the non-cut portion of the perforation line 49. Thus, by suitably changing the spacing of the cut portions of the perforation line 49, the force required for peeling the bottom flap 11L, 11 R from the back flap 17L, 17R can be adjusted.

**[0049]** Assuming that the adhesive region 41 of each front flap 13L, 13R is not enclosed by the non-adhesive region 42, the front flap 13L, 13R is bonded with one of the bottom flaps 11L, 11R at portions other than the adhesive region 41 due to the adhesive agent that runs off from the adhesive region 41. Consequently, it becomes difficult to start the delamination of the front flap 13L, 13R at the perforation line 44, and it also becomes difficult to adjust the force required for peeling the bottom flap 11 L, 11 R from the front flap 13L, 13R. With respect to this point, since the adhesive region 41 is enclosed by the non-adhesive region 42 in this embodiment, even if the adhesive agent runs off from the adhesive region 41, the adhesive agent that runs off is spread on the non-adhesive region 42. In other words, the adhesive agent that runs off from the adhesive region 41 does not contribute to the bonding between the front flap 13L, 13R and the bottom flap 11 L, 11 R. Thus, the delamination of the front flap 13L, 13R at the perforation line 44 is started reliably. In comparison to cases where the non-adhesive region 42 is omitted, the flexibility in relation to the position and amount of applying the adhesive agent is improved. The case of the front flaps 13L, 13R, which has been described in this paragraph, applies to the back flaps 17L, 17R.

**[0050]** Assuming that the perforation line 44 is provided in the direction of the arrow X in Fig. 4 over the entire width of each front flap 13L, 13R, the overlap of the perforation line 44 and the adhesive agent 55 on the front flap 13L, 13R differs according to the spreading of the adhesive agent. Even though the force required for peeling one of the bottom flaps 11 L, 11 R from the front flap 13L, 13R can be adjusted, the force required for starting the peeling may vary for each wrapping object feeder 1. With respect to this point, since the perforation line 44 is configured of the flat part 44a and the inclined part 44b in this embodiment, even if the adhesive agent is applied on the extended line of the flat part 44a, the force required for starting the peeling of the bottom flap 11 L, 11 R from the front flap 13L, 13R is defined by the length of the flat part 44a. Consequently, it is possible to eliminate the variation and equalize the force required for starting the peeling of the bottom flap 11 L, 11 R from the front flap 13L, 13R for each wrapping object feeder 1. As a result of the overlap of the flat part 44a and the adhesive agent 55 on the front flaps 13L, 13R being restricted, it is possible to limit the maximum value of the force required for starting the peeling of the bottom flap 11 L, 11 R from the front flap 13L, 13R. As a result of the overlap of the flat part 44a and the adhesive agent 55 on the front flaps 13L, 13R being restricted based on the shape of the ad-

hesive region 41, the flexibility in relation to the position and amount of applying the adhesive agent is improved. Furthermore, since the perforation line 44 includes the inclined part 44b, the strength of the end wall 4SL, 4SR can be easily increased by enlarging the adhesive area between the front flaps 13L, 13R and the bottom flaps 11 L, 11 R. The case of the front flaps 13L, 13R, which has been described in this paragraph, applies to the back flaps 17L, 17R.

**[0051]** Assuming that the one or more half-cut line 45 of the adhesive region 41 of each front flap 13L, 13R is omitted, the delamination of the front flap 13L, 13R when peeling one of the bottom flaps 11 L, 11R from the front flap 13L, 13R occurs at the entire adhesive region 41. With respect to this point, since the adhesive region 41 is divided into a plurality of portions by the one or more half-cut line 45 in this embodiment, the delamination of the front flap 13L, 13R occurs only at the portion overlapping with the adhesive agent 55 among the divided portions, and not at the entire adhesive region 41. Consequently, the force required for peeling the bottom flap 11 L, 11 R from the front flap 13L, 13R decreases. Since each half-cut line 45 extends at a slant toward the imaginary line CL in Fig. 4 with a point on the perforation line 44 as the starting point, the fact that the force that works on the bottom flap 11 R is concentrated toward the imaginary line CL also contributes to reducing the force required for peeling the bottom flap 11 L, 11 R from the front flap 13L, 13R. The case of the front flaps 13L, 13R, which has been described in this paragraph, applies to the back flaps 17L, 17R.

**[0052]** The non-adhesive region 47 of each back flap 17L, 17R is not provided on the upper face of the tip portion of the back flap 17L, 17R, which does not directly come into contact with any of the bottom flaps 11 L, 11 R, and is provided only on the upper face of the proximal end portion of the back flap 17L, 17R, which directly comes into contact with one of the bottom flaps 11 L, 11 R. As a result of providing the non-adhesive region 47 only to the portion that directly comes into contact with the bottom flap 11 L, 11 R, the costs required for providing the non-adhesive region 47 are minimized.

**[0053]** At each end wall 4SL, 4SR, the non-adhesive region 47 exists between the adhesive region 41 of the front flap 13L, 13R and the adhesive region 46 of the back flap 17L, 17R. As a result of the adhesive region 41 of the front flap 13L, 13R and the adhesive region 46 of the back flap 17L, 17R being positioned separately, the drawback of the adhesive agent on the front flap 13L, 13R and the adhesive agent on the back flap 17L, 17R becoming mixed together; for example, the adhesive agent of a predetermined amount not being retained on each adhesive region 41, 46 does not occur easily.

**[0054]** The first embodiment has the following advantages.

- (1) The adhesive region 41 of each front flap 13L, 13R is defined by the half-cut line 43 and the perfo-

ration line 44. The adhesive region 46 of each back flap 17L, 17R is defined by the half-cut line 48 and the perforation line 49. The perforation lines 44, 49 are both located on the tip of the bottom flap 11 R. The adhesive regions 41, 46 are enclosed by the respective non-adhesive regions 42, 47. The adhesive agent is spread over the adhesive regions 41, 46 and the non-adhesive regions 42, 47 across the perforation lines 44, 49. According to this configuration, based on the start of the delamination of the front flap 13L, 13R and the back flap 17L, 17R at the perforation lines 44, 49, the peeling of the bottom flap 11 R from the front flap 13L, 13R and the back flap 17L, 17R is enabled. Thus, by suitably changing the spacing between the cut portions of the perforation lines 44, 49, the force required for peeling the bottom flap 11R from the front flap 13L, 13R and the back flap 17L, 17R can be adjusted.

(2) Each perforation line 44, 49 is a polygonal line configured of the flat part 44a, 49a and the inclined part 44b, 49b. Thus, the maximum value of force that is required at the start of peeling each bottom flap 11L, 11R from one of the front flaps 13L, 13R and one of the back flaps 17L, 17R is defined by the length of the flat parts 44a, 49a. The level of force that is required can be limited.

(3) The adhesive regions 41, 46 are divided into a plurality of portions by the respective one or more half-cut lines 45, 50. Thus, during the peeling of each bottom flap 11 L, 11 R from one of the front flaps 13L, 13R and one of the back flaps 17L, 17R, the delamination of the front flap 13L, 13R and the back flap 17L, 17R occurs not at the overall adhesive regions 41, 46, but occurs only at the portion that overlaps with the adhesive agent 55 and the portion that overlaps with the adhesive agent 56 among the divided portions. This configuration can facilitate the peeling of the bottom flap 11 L, 11 R from the front flap 13L, 13R and the back flap 17L, 17R.

(4) The non-adhesive region 47 of each back flap 17L, 17R is provided only to the upper face of the proximal end portion of the back flap 17L, 17R, which is in direct contact with one of the bottom flaps 11L, 11R. In the foregoing case, the costs required for providing the non-adhesive region 47 are minimized.

(Second Embodiment)

**[0055]** A second embodiment of the present invention will now be described with reference to Fig. 6. The second embodiment is a result of changing the shape of the adhesive region 46 of each back flap 17L, 17R in the first embodiment, more specifically changing the half-cut line that defines the adhesive region 46. Thus, in the ensuing description, the changes from the first embodiment are

mainly discussed.

**[0056]** Referring to Fig. 6, of the half-cut line defining each adhesive region 46, the portion near the tip of one of the back flaps 17L, 17R shown as reference numeral 60 in Fig. 6 extends in a direction that intersects obliquely with the ruled line 34 of the back flap 17L, 17R, and is parallel to the one or more half-cut lines 50 in the adhesive region 46. The half-cut line 60, as with the half-cut line 48 of the first embodiment, is a continuous cut line formed by cutting into the back flap 17L, 17R from the upper side to the middle of the thickness direction. The depth of the cut of the half-cut line 60 is preferably 10% to 90%, and more preferably 30% to 80% of the thickness of the paper board.

**[0057]** In the case of the first embodiment, as shown in Fig. 4, a portion extending in parallel to the ruled line 34 of one of the back flaps 17L, 17R is included in the half-cut line 48 defining the adhesive region 46 of the back flap 17L, 17R. In the course of forming each end wall 4SL, 4SR, the back flap 17L, 17R is bent at the ruled line 34 in a state where the ruled line 34 provided at the proximal end of the back flap 17L, 17R is fixed so that it does not move. Meanwhile, when cuts such as half-cut lines are provided in a flap, the strength of the flap deteriorates at the section where the cuts are formed. Thus, when a half-cut line that is parallel to the ruled line 34, which is provided at the proximal end of each back flap 17L, 17R, is provided in the back flap 17L, 17R, there is a possibility that the back flap 17L, 17R will be bent at the half-cut line when the force for bending the back flap 17L, 17R works on the tip of the back flap 17L, 17R. This kind of bending defect tends to occur notably when a half-cut line that is parallel to the ruled line 34 is provided near the tip of the back flap 17L, 17R to become the site of action of the bending force. In other words, when each back flap 17L, 17R is to be bent at the ruled line 34, there are cases where the back flaps 17L, 17R are unintentionally bent at the portion of the half-cut line 48 extending parallel to the ruled line 34, and the foregoing unintended bending of the back flap 17L, 17R tends to occur as a result of the portion of the half-cut line 48 extending parallel to the ruled line 34 being positioned near the tip of the back flap 17L, 17R.

**[0058]** With respect to this point, as shown in Fig. 6, the second embodiment is configured such that the extended line of the ruled line 34 and the extended line of the half-cut line 60 intersect each other. In other words, cuts; that is, portions that cause the strength to deteriorate do not exist continuously in the extending direction of the ruled line 34 in each back flap 17L, 17R. Thus, even with a configuration where the half-cut line 60 is provided at the tip of each back flap 17R in the adhesive region 46, it is possible to inhibit the back flap 17L, 17R from being bent at the half-cut line 60 rather than the back flap 17L, 17R being bent at the ruled line 34. Specifically, since the half-cut line 60 extends in a direction that intersects with the extended line of the ruled line 34 and not parallel to the ruled line 34, the unintentional

bending of the back flap 17L, 17R at a portion other than at the ruled line 34 does not occur easily when the back flap 17L, 17R is to be bent at the ruled line 34. Since the half-cut line 60 is parallel to the half-cut line 50 in the adhesive region 46, it can be formed easily in comparison to the case of intersecting obliquely with the half-cut line 50.

**[0059]** The second embodiment has the following advantage in addition to the advantages of the first embodiment.

(5) Of the half-cut line defining the adhesive region 46 of each back flap 17L, 17R, the portion 60 near the tip of the back flap 17L, 17R extends in a direction that intersects obliquely with the ruled line 34 of the back flap 17L, 17R. Thus, when each back flap 17L, 17R is to be bent at the ruled line 34, unintentional bending of the back flap 17L, 17R at a portion other than at the ruled line 34 does not occur easily.

**[0060]** The first and second embodiments may be modified as follows.

**[0061]** In the foregoing embodiments, although a non-adhesive region 47 exists between the adhesive region 41 of the front flap 13L, 13R and the adhesive region 46 of the back flap 17L, 17R at each end wall 4SL, 4SR, the adhesive region 41 and the adhesive region 46 may be continuous. The advantages according to (1) to (5) above can also be achieved in this configuration.

**[0062]** In the foregoing embodiments, although the non-adhesive region 47 of each back flap 17L, 17R is provided only to the upper face of the proximal end portion of the back flap 17L, 17R, which is in direct contact with one of the bottom flaps 11L, 11R, all portions excluding the adhesive region 46 of the upper face of the back flap 17L, 17R may be used as the non-adhesive region 47. The advantages according to (1) to (3) and (5) above can also be achieved in this configuration.

**[0063]** In the foregoing embodiments, the back flap 17L, 17R is located inward of the front flap 13L, 13R at each end wall 4SL, 4SR. But without limitation thereto, the length of the front flap 13L, 13R may be made longer than the length of the back flap 17L, 17R, and the front flap 13L, 13R may be located inward of the carton main body 4 than the back flap 17L, 17R. In the foregoing case, preferably, the non-adhesive region 42 of each front flap 13L, 13R is provided only to the upper face of the proximal end portion of the front flap 13L, 13R which are in direct contact with one of the bottom flaps 11 L, 11 R. According to this configuration, similar advantages as (1) to (5) above may be achieved. Alternatively, if the strength of each end wall 4SL, 4SR can be sufficiently ensured, the front flap 13L, 13R and the back flap 17L, 17R may be mutually separated without overlapping at the end wall 4SL, 4SR. In the foregoing case, costs required for providing the non-adhesive regions 42, 47 can be reduced.

**[0064]** In the foregoing embodiments, at each end wall 4SL, 4SR, the front flap 13L, 13R and the back flap 17L,

17R are located inward of the carton main body 4 than the bottom flap 11 L, 11 R. But without limitation thereto, by suitably changing the configuration of the flaps, for instance, the front flap and the bottom flap may be located inward of the carton main body 4 than the back flap.

**[0065]** In the foregoing embodiments, the adhesive region 41 and the non-adhesive region 42 are provided in each front flap 13L, 13R, and the adhesive region 46 and the non-adhesive region 47 are provided in each back flap 17L, 17R. But without limitation thereto, an adhesive region and a non-adhesive region may be provided in each bottom flap 11 L, 11 R in addition thereto or in substitute thereof. The advantages according to (1) to (5) above can also be achieved in this configuration.

**[0066]** In the foregoing embodiments, paint is applied to the non-adhesive regions 42, 47 in order to limit the adhesive property with the adhesive agent. But without limitation thereto, for example, the adhesive property of the non-adhesive regions 42, 47 with the adhesive agent may be made lower than that of the adhesive regions 41, 46 by causing the surface roughness of the non-adhesive regions 42, 47 to be lower than the surface roughness of the adhesive regions 41, 46.

**[0067]** In the foregoing embodiments, the perforation line 44 is a line in which cuts penetrating each front flap 13L, 13R are aligned discontinuously, and the perforation line 49 is a line in which cuts penetrating each back flap 17L, 17R are aligned discontinuously. But without limitation thereto, the cut portion of the perforation line 44 may be formed by cutting into each front flap 13L, 13R from the upper side to the middle of the thickness direction. Similarly, the cut portion of the perforation line 49 may be formed by cutting into each back flap 17L, 17R from the upper side to the middle of the thickness direction. The advantages according to (1) to (5) above can also be achieved in this configuration.

**[0068]** In the foregoing embodiments, the one or more half-cut lines 45, 50 in each adhesive region 41, 46 may be omitted. Advantages similar to (1) to (4) above can also be achieved in this configuration. The one or more half-cut lines 45, 50 may be any type of line so as long as they are able to divide the adhesive region 41, 46 into a plurality of portions by extending toward the proximal end of one of the bottom flaps 11 L, 11 R, in other words, extending toward the side of one of the front flaps 13L, 13R or one of the back flaps 17L, 17R that is closest to the bottom wall 4BT, with a point on one of the perforation lines 44, 49 as the starting point.

**[0069]** In the foregoing embodiments, each perforation line 44, 49 does not have to be a polygonal line, and may be a straight line or a curved line. Advantages similar to (1) above can also be achieved in this configuration.

**[0070]** In the second embodiment, of the half-cut line 48 defining the adhesive region 46 of each back flap 17L, 17R, the portion 60 near the tip of the back flap 17L, 17R extends in a direction that intersects obliquely with the ruled line 34 of the back flap 17L, 17R. But without limitation thereto, in addition thereto or in substitute thereof,

of the half-cut line 43 defining the adhesive region 41 of each front flap 13L, 13R, the portion near the tip of the front flap 13L, 13R may extend in a direction that intersects obliquely with the ruled line 33 of the front flap 13L, 13R.

DESCRIPTION OF THE REFERENCE NUMERALS

[0071] FP... front face projection, 1... wrapping object feeder, 2... carton, 3... roll, 3C... paper core, 3F... wrapping film, 4... carton main body, 4B... back wall, 4F... front wall, 4BT... bottom wall, 4Fc... adhesion point, 4Fd... sub-front wall, 4SL, 4SR... end wall, 5... lid body, 5E... opening end, 5F... lid body front wall, 5T... top wall, 5Fm... tear perforation line, 5SL, 5SR... lid body end wall, 6... cutting blade, 11... bottom wall portion, 11 L, 11 R... bottom flap, 11 La, 11Ra... extension part, 12... ruled line, 13... front wall portion, 13a... protrusion, 13L, 13R... front flap, 14... ruled line, 15... sub-front wall portion, 15L, 15R... fall-out prevention piece, 16... ruled line, 17... back wall portion, 17L, 17R... back flap, 18... ruled line, 19... top wall portion, 19L, 19R... lid body top flap, 20... ruled line, 21... lid body front portion, 21a... cut, 21 L, 21 R... lid body front flap, 31, 32, 33, 34, 35, 36, 37... ruled line, 41, 46... adhesive region (first region), 42, 47... non-adhesive region (second region), 43, 48... half-cut line, 44, 49... perforation line, 44a, 49a... flat part, 44b, 49b... inclined part, 45, 50... half-cut line, 55, 56... adhesive agent, 60... half-cut line.

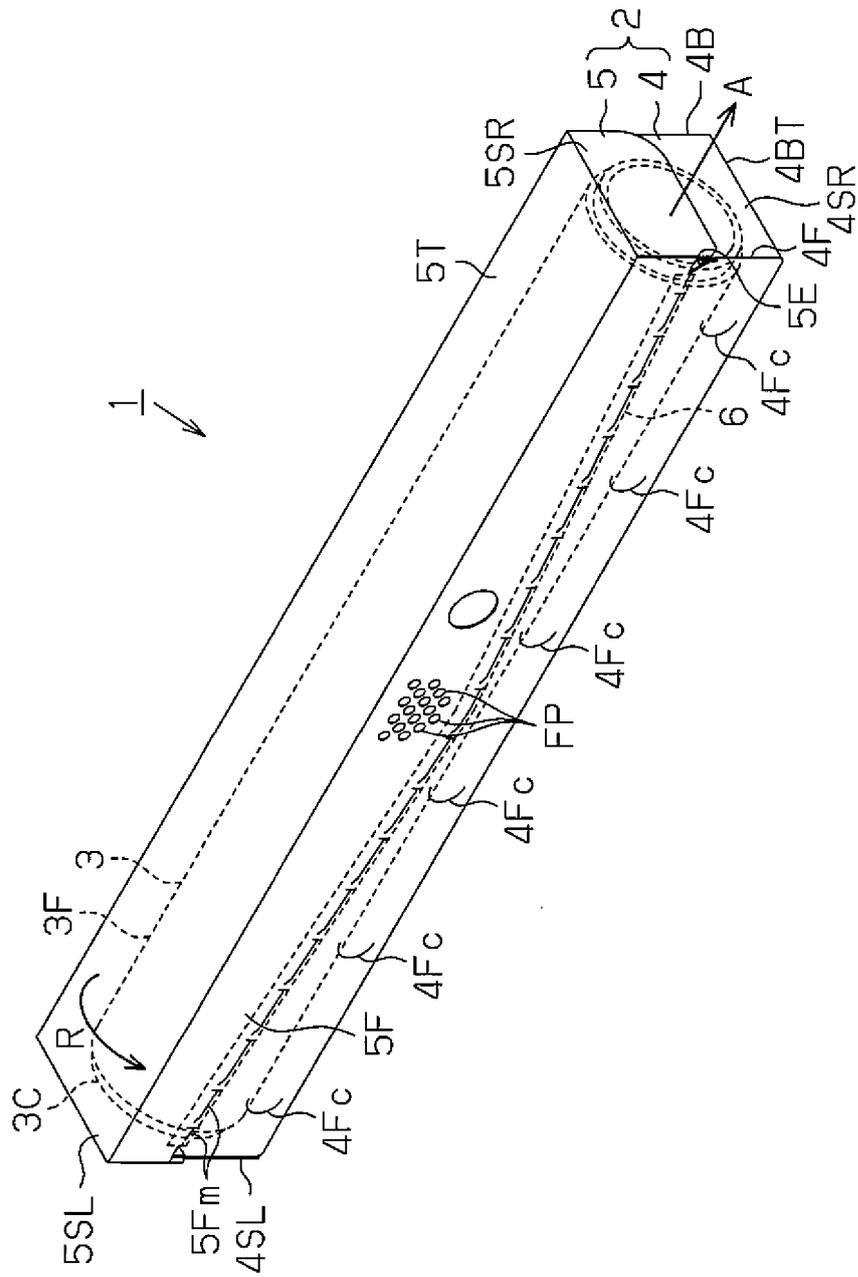
Claims

- 1. A carton comprising a bottom wall, a pair of side walls provided at the front and back of the bottom wall, and a pair of end walls provided at the left and right of the bottom wall, the carton being **characterized in that** each of the end walls is formed by overlapping a flap extending from one end of either a left end or a right end of the bottom wall onto two flaps each extending from the same end of either a left end or a right end of one of the side walls, and joining the flaps using an adhesive agent, at least one of the flaps includes a surface having a first region and a second region, and is joined with another flap at the first region, wherein the first region is defined by a perforation line, and the second region has an adhesive property to the adhesive agent lower than that of the first region, and the adhesive agent is spread over the first region and the second region across the perforation line.
- 2. The carton according to claim 1, **characterized in that** the first region is defined by a half-cut line in addition to the perforation line, and the perforation line is, in comparison to the half-cut

- line, positioned toward a tip of the outermost flap of the end wall including a flap having the perforation line.
- 3. The carton according to claim 2, **characterized in that** an extended line of the half-cut line intersects an extended line of a ruled line defining a proximal end of the flap having that half-cut line.
- 4. The carton according to any one of claims 1 to 3, **characterized in that** the perforation line is a polygonal line.
- 5. The carton according to any one of claims 1 to 4, **characterized in that** a second half-cut line is provided inside the first region, and the second half-cut line is a straight line extending toward the proximal end of the outermost flap of the end wall, with a point on the perforation line as a starting point.
- 6. The carton according to any one of claims 1 to 5, **characterized in that** the outermost flap of the end wall is a flap extending from the bottom wall, and the flap having the first region and the second region is a flap extending from the side wall.
- 7. A wrapping object feeder, comprising:

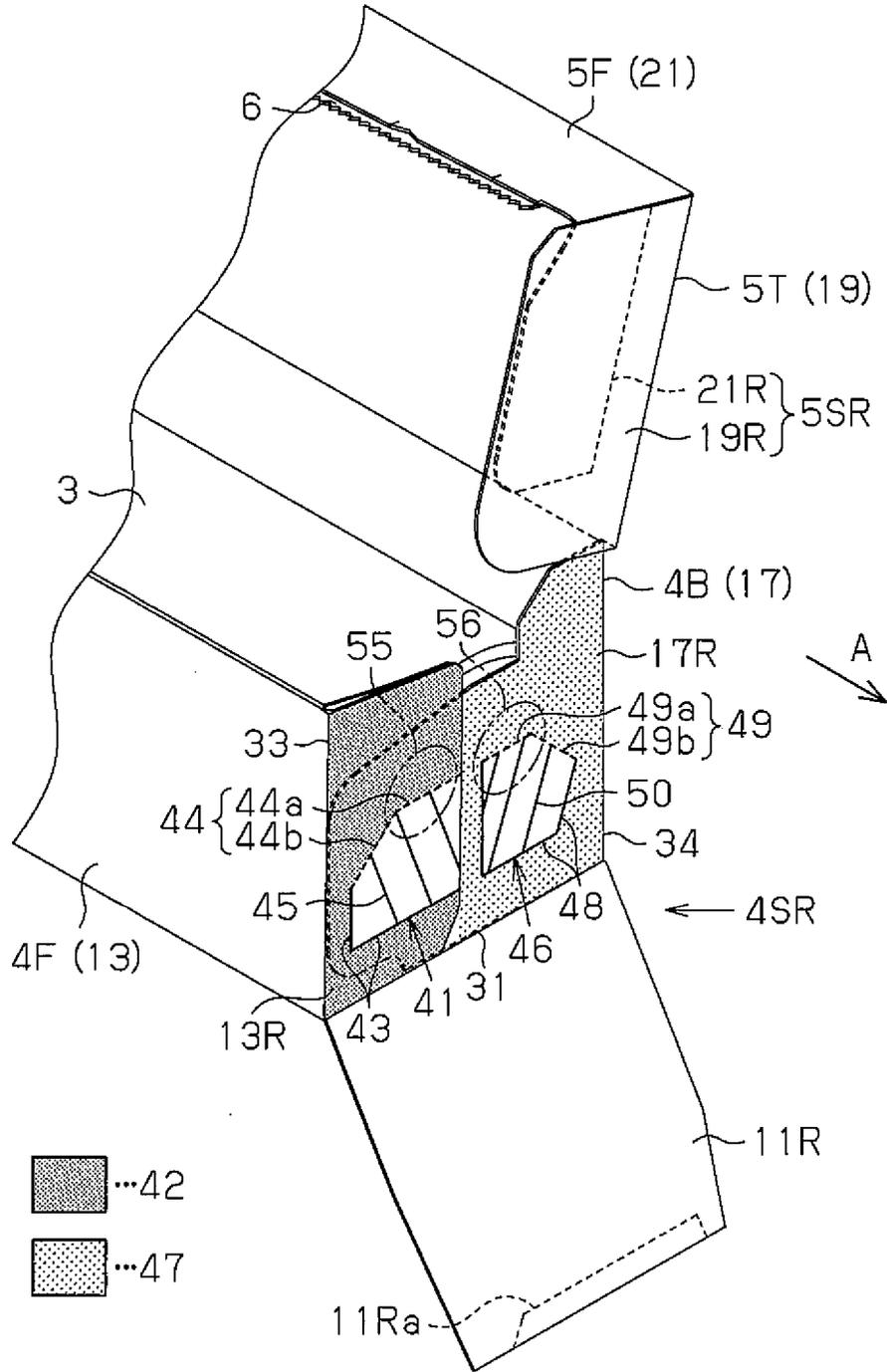
a roll formed by winding a wrapping object; and the carton according to any one of claims 1 to 6 for housing the roll.

**Fig.1**

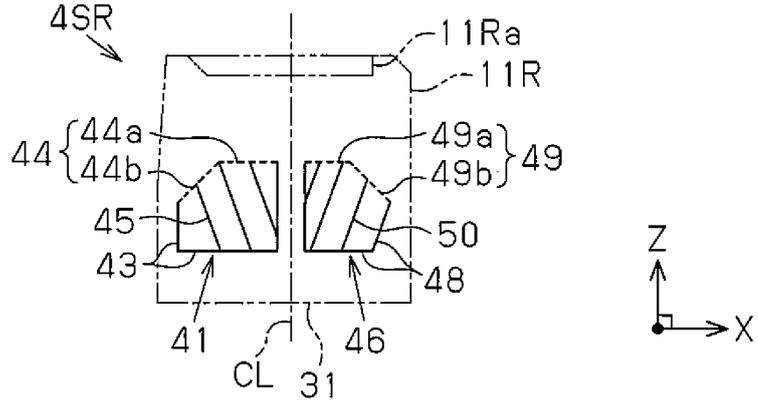




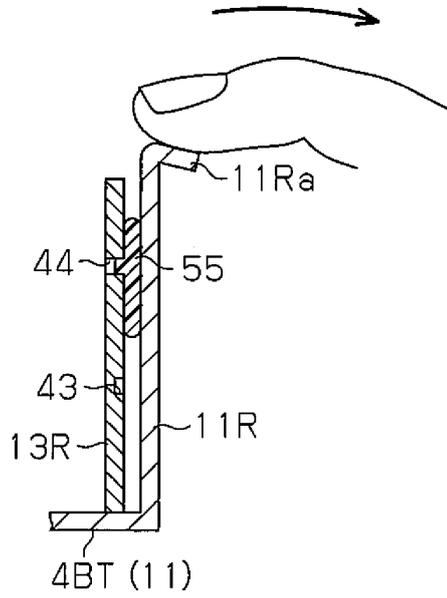
**Fig.3**



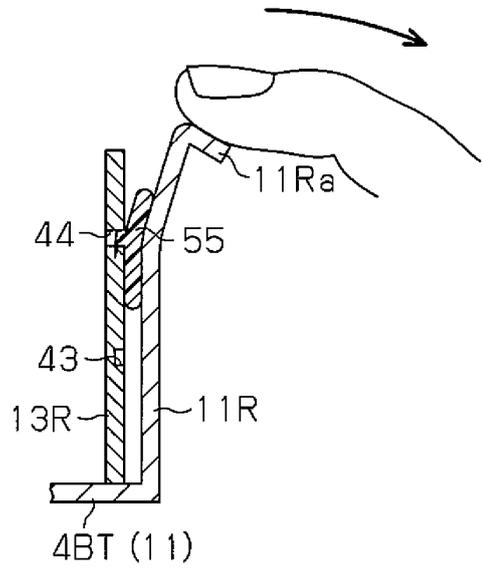
**Fig. 4**



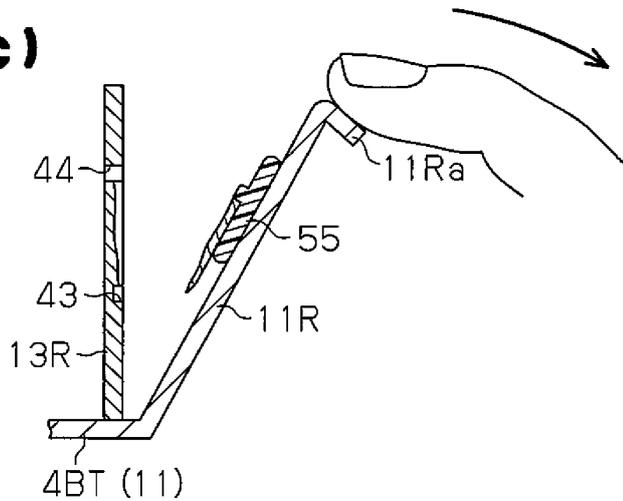
**Fig. 5 (a)**



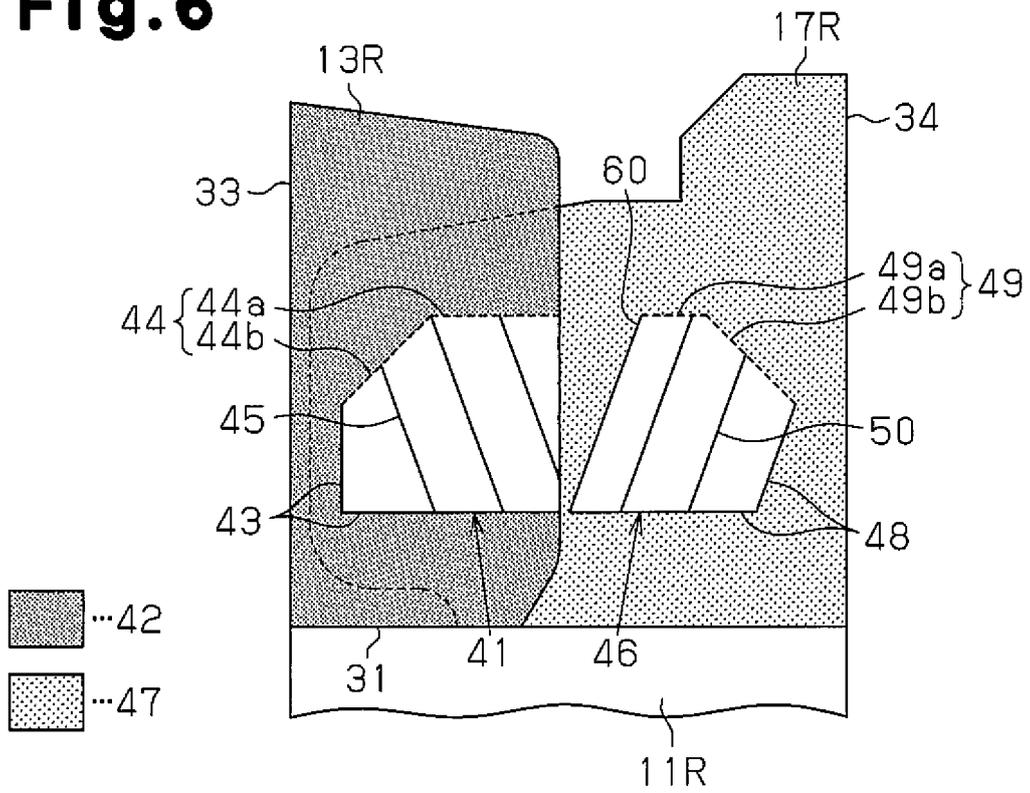
**Fig. 5 (b)**



**Fig. 5 (c)**



**Fig. 6**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2010/070992

A. CLASSIFICATION OF SUBJECT MATTER B65D5/72(2006.01)i, B65D5/10(2006.01)i, B65D5/54(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) B65D5/00-5/76, B65D83/08		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2010 Kokai Jitsuyo Shinan Koho 1971-2010 Toroku Jitsuyo Shinan Koho 1994-2010		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2003-246314 A (Teikoku Seiyaku Co., Ltd.), 02 September 2003 (02.09.2003), paragraphs [0001] to [0040]; fig. 1 to 9 (Family: none)	1-7
Y	JP 2000-085751 A (Otsuka Pharmaceutical Factory, Inc.), 28 March 2000 (28.03.2000), paragraphs [0001] to [0005]; fig. 1 to 9 (Family: none)	1-7
Y	JP 2001-088821 A (Ricoh Co., Ltd.), 03 April 2001 (03.04.2001), paragraph [0016]; fig. 10 to 11 (Family: none)	5-7
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 21 December, 2010 (21.12.10)	Date of mailing of the international search report 11 January, 2011 (11.01.11)	
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer	
Facsimile No.	Telephone No.	

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP2010/070992

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2007-176599 A (Kureha Corp.), 12 July 2007 (12.07.2007), paragraphs [0017] to [0023]; fig. 4 to 5 & CN 1974341 A & KR 10-2007-0057006 A	7
A	JP 2004-051204 A (Teikoku Seiyaku Co., Ltd.), 19 February 2004 (19.02.2004), paragraphs [0017] to [0037]; fig. 1 to 5 (Family: none)	1-7

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**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- JP 2007176599 A [0004]