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EP 0 344 996 B1

## Description

The present invention relates generally to a tear tape opening system for a carton or package formed of corrugated board and more particularly it relates to such a system wherein the edge produced by the opening system at the outside surface of the outside liner board of the corrugated board packaging material is evenly torn without any unevenness therealong resulting from the tearing operation.

A similar type of opening system is disclosed in our European Patent Application No. 88301122.3, published as EP 0278751, being an Article 54(3) EPC document, entitled "A tear tape opening system". In this referenced application, there is disclosed a tear tape opening system for use with packages formed of kraft paper, paper board or corrugated board. The major benefit derived from the invention the subject of EP 0278751 is to provide reinforcing along the tear line or lines in the outside surface of the material forming the package, so as to prevent uneven tearing or delamination of the outside surface of the material forming the package at or along the tear line. The system disclosed in this prior application consists of a tear tape in the form of hot melt coated tape or string adhered along the inside surface of the package material, along the desired tear line of the opening system, together with a tear guide system consisting of one or a plurality of tapes arranged on the outside surface of the package material along the desired line of tear and which guides the tear produced by the tear tape so as to prevent uneven tearing of the package forming material. Furthermore, in connection with packages formed of corrugated board, this prior application teaches, in addition to disposing the tear guide system on the outside surface of the corrugated board, that it is possible to arrange the guide tape or tapes on the inside surface of the outside liner and that it is possible to provide the tear tape on the inside or outside surface of the inside liner board.

In connection with employing the tear tape opening system according to the above-identified application, with a package or carton formed of corrugated board, it is not possible to utilise a hot melt coated tape for the tear guide system on the outside surface of the corrugated board since these tapes are applied at the doublebacker section of the corrugation forming machine or corrugator when the outside liner is incorporated in the formation of the corrugated board. The outside liner is incorporated in the corrugated board with the use of hot plates which press the outside liner against the flutes of the corrugating medium and the heat activates the adhesive on the flutes to thereby adhere the outside liner thereto. Thus, if a hot melt coated tape were also applied at this point, the heat of the hot plates would cause the hot melt to soften and smear, resulting in an unsightly package and unworkable tear guide system. Alternatively, as indicated in the prior application, the tear guide tape can be applied in the form of a hot melt coated tape to the inside surface of the outside liner at the doublebacker of the corrugator. However, in this latter application when the tear tape is pulled through the corrugated board, the outer surface of the outside liner at the tear line may become unevenly torn since there is no reinforcement at the outer surface to reinforce the edge of the tear. This drawback is particularly problematic where the outside liner is coated for the purpose of accepting printing thereon, since this coating tends to flake and become broken when torn through by the tear tape. Because of the poor results obtained in such an opening system for a carton or package formed of corrugated board relative to the unevenness of the edges along the tear line, the carton itself is too unsightly to be utilised in a consumer display of the product. Therefore, a retailer must go through the labour intensive operation of unpacking the carton and stocking the store shelves.

It is, therefore, a primary object of the present invention to provide a tear tape opening system for establishing an opening in a carton or package formed of corrugated board, whereby the edge of the tear line at the outside surface of the outside liner of the corrugated board is reinforced so as to be stabilised during the opening procedure to result in an even torn edge therealong and to also provide a reinforced torn edge for the resulting open container.

The above object is accomplished in accordance with the present invention by providing a tear tape opening system for creating an opening in a package or carton formed of corrugated board wherein the corrugated board consists of an outside liner, an inside liner and a corrugating medium thereinbetween, wherein the outside liner has outside and inside surfaces and the inside liner has outside and inside surfaces, and the inside surfaces of the outside and inside liners face the corrugating medium. The tear tape opening system according to the present invention includes a tear tape adhered to the outside surface of the inside liner along the desired line of opening and a paperbacked hot melt coated tape, wider than the tear tape, adhered to the outside surface of the outside liner along the desired line of opening so as to guide the tear formed by the tear tape and reinforce and stabilize the edges of the tear along the outside surface of the outside liner. By the utilisation of a paperbacked hot melt coated tape for the tear guide system, the tape is capable of being applied to the outside surface of the outside liner of the corrugated board during the incorporation of the outside liner in the corrugated board. Thus, the paperbacked hot melt coated tape is applied in the doublebacker segment of the corrugator board forming machine and the paperbacking prevents the hot melt coated tape from being directed contacted by the hot plates and resulting in the melting and smearing thereof.

An embodiment of the invention is described below, by way of example, with reference to the accompanying drawings, wherein:-

FIGURE 1 is a perspective view of a carton having the tear tape opening system embodying the present invention;

FIGURE 2 is a perspective view of the carton of Figure 1, subsequent to being opened by the tear tape opening system with the sections of the carton shown exploded and the product therein arranged in a consumer display;

FIGURE 3 is a perspective view of a panel of the carton of Figure 1, showing the tear tape opening system therein;

FIGURE 4 is a schematic view of a portion of the machine utilised in the formation of corrugated board; and

FIGURE 5 is a perspective view of the tear guide tape utilised in the tear tape opening system of the carton of Figure 1.

Now turning to the drawings, there is shown in Figure 1 a carton, designated 10, having a horizontally disposed tear tape opening system 12 passing circumferentially throughout the periphery thereof and dividing the carton into a lower section 14 and an upper section 16. Thus, lower and upper sections 14 and 16, respectively, can be separated from each other as shown in Figure 2 and the lower section utilised as a tray for the product 18 packaged in carton 10 in a consumer display. However, in order for lower section 14 of carton 10 to be utilised together with the product 18 contained in the carton in such a consumer display, the tear line 20 of lower section 14 resulting from the operation of the tear tape opening system 12 must be straight and even without any tears or breaks in the outside surface of the outside liner of the corrugated board.

Turning now to Figure 3, therein is shown a corrugated board panel, designated 22, of carton 10 having outside and inside liners 24 and 26 respectively, and corrugations or corrugating medium 28 therein-between. Tear tape opening system 12 consists of a tear tape 30 adhered to the outside surface of inside liner 26 along the desired opening line and a tear guide tape, designated 32, adhered to the outside surface of outside liner 24 of panel 22. In order to operate the tear tape opening system, the user grasps pull tab 34, formed by die cut 36, and pulls in the direction indicated by the arrow. Tear tape 30 is thereby caused to rip through inside liner 26, corrugations 28 and outside liner 24. Tear lines 20 are guided in each section of panel 22 by means of guide tape 32 which lacks weft strength so that outside liner 24 is caused to tear substantially evenly, resulting in even tears along tear lines 20.

In Figure 4 there is shown the doublebacker section, designated 38, of a corrugated board-forming machine where inside liner 26 adhered to the flutes of one side of corrugating medium 28 is fed between pressure rolls 40 and hot plates 42, and outside liner 24 is applied to the opposing flutes of corrugations 28 by roller 44. Thus, outside liner 24, corrugations 28 and inside liner 26 are sandwiched between pressure rolls 40 and hot plates 42. Upstream from the doublebacker section (not shown), an adhesive is applied to the flutes of corrugations 28, which is heat activated so that when the three elements pass between pressure rolls 40 and hot plates 42, the outside liner is firmly adhered to corrugations 28. Tear tape 30 is conveniently applied to the outside surface of inside liner 26 by feeding it into the nip between inside liner 26 and pressure rolls 40. Tear tape 30 may be anything which has the ability to tear such as a hot melt coated tape or string, or pressure sensitive tape. As can be seen from Figure 4, there is no problem created by having the tear tape a hot melt coated tape or string since the tape is not exposed to hot plates 42, which are disposed on the opposite side of the corrugated board being formed between pressure rolls 40 and hot plates 42. Preferably, tear guide tape 32 is fed into the nip between outside liner 24 and roller 44, so that it is disposed on the outside surface of outside liner 24. In such a case, however, it should be noted that, as pointed out above, if tear guide tape 32 is a hot melt coated tape, the hot melt will be melted by the hot plates 42 and thus smear the outside of outside liner 24. In order to overcome this problem and still take advantage of the benefits of having tear guide tape 32 applied to the outside surface of outside liner 24, it has been found that applying a paper backing to the hot melt coated tape on the outside surface thereof, will insulate the hot melt coated tape so that hot plates 42 are not in direct contact with the hot melt of tape 32. Thus, as clearly seen in Figure 5, tear guide tape 32 consists of a hot melt coated tape 46 having a paperbacking 48 applied to one side thereof.

While only a single embodiment of the present invention has been described and shown, it is obvious that many changes and modifications may be made thereunto without departing from the spirit and scope of the present invention as defined by the accompanying claims.

## Claims

1. A tear tape opening system for establishing an opening having an even tear line in a package or carton (10) formed of corrugated board, the corrugated board having an outside liner (24), an inside liner (26), and corrugations (26) therein between, the outside and inside liners each having outside and inside surfaces, the inside surfaces of the outside and inside liners (24,26) facing and being adhered to the corrugations (28), said tear tape opening system comprising:

a tear tape (30) adhered to the outside surface of the inside liner (26) of the corrugated board along the desired line of opening; and

a tear guide tape (32) adhered to the outside surface of the outside liner (24) of the corrugated board along the desired line of opening superimposed in projection on said tear tape (30), said tear guide tape (32) consisting of a hot melt coated tape adhered to the outside surface of the outside liner and having a paper backing thereon.

2. A tear tape opening system as claimed in claim 1, wherein the tear tape (30) and the tear guide tape (32) extend circumferentially throughout the periphery of the carton (10) so that when a opening is established by the tear tape opening system, the carton (10) is separated into two sections at least one of which is suitable for consumer display of the product packaged in the carton.

3. A tear tape opening system as claimed in claim 2, wherein at least the tear tape edge corresponding to the tear line of the carton section of the consumer display underlies said tear guide tape.

4. A tear tape opening system as claimed in claim 1 or claim 2, wherein the tear guide tape (32) is wider than the tear tape (30) and overlies both edges of the tear tape (32).

5. A method of producing a tear tape opening system for establishing an opening having an even tear line in a package or carton (10) formed of corrugated board, the corrugated board having an outside liner (24), an inside liner (26), and corrugations (28) thereinbetween, the outside (24) and inside (26) liners each having outside and inside surfaces, the inside surfaces of the outside and inside liners facing and being adhered to the corrugations (28), the method comprising:

adhering the tear tape (30) to the outside surface of the inside liner (26) of the corrugated board along the desired line of opening by feeding the tear tape (30) into the nip between the pressure rolls and the inside liner (26) which is adhered to the flutes of one side of the corrugating medium in the doublebacker of the corrugator forming machine; and

adhering the tear guide tape (32) to the outside surface of the outside liner (24) of the corrugated board superimposed in projection on said tear tape (30) along the desired line of opening by feeding the tear guide tape (32) into the nip between the outside liner (20) and the roller pressing the outside liner (24) into contact with the flutes of the side of the corrugating medium opposite the inside liner (26), the tear guide tape (32) being formed of a hot melt coated tape having a paper backing thereon to prevent the heat from the hot plates from melting the hot melt.

## Patentansprüche

1. Öffnungssystem mit Zerreißband zum Herstellen einer Öffnung mit einer glatten Reißlinie in einer aus Wellpappe hergestellten Packung oder einem entsprechenden Karton (10), wobei die Wellpappe einen äußeren Rücken (24), einen inneren Rücken (26) und Wellungen (28) dazwischen hat, der äußere und innere Rücken jeweils eine Außen- und eine Innenseite hat, die Innenseiten des äußeren und inneren Rückens (24, 26) einander gegenüberliegen und an den Wellungen (28) angeklebt sind, wobei das besagte Öffnungssystem mit Zerreißband umfaßt:

ein an der Außenseite des inneren Rückens (26) der Wellpappe entlang der gewünschten Öffnungslinie haftendes Zerreißband (30); und

ein Rißführungsband (32), das, entlang der gewünschten Öffnungslinie in Projektion dem besagten Zerreißband (30) überlagert, an der Außenseite des äußeren Rückens (24) der Wellpappe haftet, wobei das besagte Rißführungsband (32) aus einem mit Schmelzkleber beschichteten Band besteht, das an der Außenseite des äußeren Rückens haftet und darauf eine Deckschicht aus Papier hat.

2. Öffnungssystem mit Zerreißband nach Anspruch 1, dadurch gekennzeichnet, daß sich das Zerreißband (30) und das Rißführungsband (32) in Umfangsrichtung ganz um die Außenseite des Kartons (10) herumerstrecken, so daß, wenn mit dem Öffnungssystem mit Zerreißband eine Öffnung hergestellt ist, der Karton (10) in zwei Abschnitte geteilt wird, von denen mindestens einer zur Kundenauslage des in dem Karton verpackten Produkts geeignet ist.

3. Öffnungssystem mit Zerreißband nach Anspruch 2, dadurch gekennzeichnet, daß zumindest die Kante des Zerreißbandes, die der Reißlinie des Kartonabschnitts für die Kundenauslage entspricht, unter dem besagten Rißführungsband liegt.

4. Öffnungssystem mit Zerreißband, nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß das Rißführungsband (32) breiter als das Zerreißband (30) ist und beide Kanten des Zerreißbandes (30) überlagert.

5. Verfahren zum Herstellen eines Öffnungssystems mit Zerreißband zum Herstellen einer Öff-

nung mit einer glatten Reißlinie in einer aus Wellpappe hergestellten Packung oder einem entsprechenden Karton (10), wobei die Wellpappe einen äußeren Rücken (24), einen inneren Rücken (26) und Wellungen (28) dazwischen hat, der äußere (24) und innere (26) Rücken jeweils Außen- und Innenseiten hat, die Innenseiten des äußeren und inneren Rückens einander gegenüberliegen und an den Wellungen (28) angeklebt sind, wobei das Verfahren umfaßt:

das Zerreißband (30) an die Außenseite des inneren Rückens (26) der Wellpappe entlang der gewünschten Öffnungslinie anzukleben, indem das Zerreißband (30) in den Spalt zugeführt wird, zwischen den Druckrollen und dem inneren Rücken (26), welcher auf die Riffeln auf der einen Seite des welligen Materials im den doppelten Rücken bildenden Teil der die Wellpappe herstellenden Maschine aufgeklebt wird; und

das Rißführungsband (32) auf die äußere Oberfläche des äußeren Rückens (24) entlang der gewünschten Öffnungslinie in Projektion dem besagten Zerreißband (30) überlagert anzukleben, indem das Rißführungsband (32) in den Spalt zwischen dem äußeren Rücken (24) und der Rolle, die den äußeren Rücken (24) in Berührung mit den Riffeln der dem inneren Rücken (26) gegenüberliegenden Seite des welligen Materials drückt, zugeführt wird, wobei das Rißführungsband (32) aus einem mit Schmelzkleber beschichteten Band gebildet ist, das eine Deckschicht aus Papier darauf hat, um die Hitze von den heißen Platten davon abzuhalten, den Schmelzkleber zu schmelzen.

## Revendications

1. Système d'ouverture à bande d'arrachage destiné à établir une ouverture, comportant une ligne d'arrachage dans un emballage ou carton (10) constitué d'une feuille ondulée, la feuille ondulée présentant une doublure extérieure (24), une doublure intérieure (26) et des ondulations (28) entre celles-ci, les doublures extérieure et intérieure comportant chacune des surfaces extérieures et intérieures, les surfaces intérieures des doublures extérieure et intérieure (24, 26) se faisant face et étant collées sur les ondulations (28), le système d'ouverture à bande d'arrachage comprenant :

une bande d'arrachage (30) collée sur la surface extérieure de la doublure intérieure (26) de la feuille ondulée le long de la ligne d'ouverture souhaitée ; et

une bande de guidage d'arrachage (32) collée sur la surface extérieure de la doublure extérieure (24) de la feuille ondulée le long de la ligne souhaitée d'ouverture superposée en projection sur la bande d'arrachage (30), la bande de guidage d'arrachage (32) étant constituée par un ruban revêtu d'une substance thermofusible sur la surface extérieure de la doublure extérieure et comportant un renfort en papier.

2. Système d'ouverture à bande d'arrachage selon la revendication 1, dans lequel la bande d'arrachage (30) et la bande de guidage d'arrachage (32) s'étendent circonférentiellement sur toute la périphérie du carton (10) de sorte que lorsqu'une ouverture est établie par le système d'ouverture de bande d'arrachage, le carton (10) est séparé en deux sections dont au moins une section est apte à la présentation au consommateur du produit conditionné dans le carton.

3. Système d'ouverture à bande d'arrachage selon la revendication 2, dans lequel au moins le bord de bande d'arrachage correspondant à la ligne d'arrachage de la section de carton de l'exposition au consommateur est situé au-dessous de la bande de guidage d'arrachage.

4. Système d'ouverture à bande d'arrachage selon la revendication 1 ou la revendication 2, dans lequel la bande de guidage d'arrachage (32) est plus large que la bande d'arrachage (30) et elle est située au-dessus des deux bords de la bande d'arrachage (32).

5. Procédé de production d'un système d'ouverture à bande d'arrachage pour établir une ouverture comportant une ligne d'arrachage régulière dans un emballage, conditionnement ou carton (10) formé par une feuille ondulée, la feuille ondulée ayant une doublure extérieure (24), une doublure intérieure (26) et des ondulations entre celles-ci, les doublures extérieure (24) et intérieure (26) ayant chacune des surfaces extérieures et intérieures, les surfaces intérieures des doublures extérieure et intérieure se faisant face et étant collées sur les ondulations (28), le procédé comprenant les étapes consistant à :

coller la bande d'arrachage (30) sur la surface extérieure de la doublure intérieure (26) de la feuille ondulée le long de la ligne d'ouverture souhaitée en amenant la bande d'arrachage (30) dans l'emprise entre les rouleaux de compression et la doublure intérieure (26) qui est collée sur les cannelures d'un côté de l'agent d'ondulation dans le double renfort de la machine à former l'ondulation ; et

coller la bande de guidage d'arrachage (32) sur la surface extérieure de la doublure extérieure (24) de la feuille ondulée surperposée en saillie sur la bande d'arrachage (30) le long de la

ligne souhaitée d'ouverture en amenant la bande de guidage d'arrachage (30) dans l'emprise entre la doublure extérieure (24) et le rouleau comprimant la doublure extérieure (24) en contact avec les cannelures du côté de l'agent d'ondulation face à la doublure intérieure (26), la bande de guidage d'arrachage (32) étant formée par une bande revêtue d'une substance thermofusible avec un renfort de papier sur celle-ci pour empêcher la chaleur des plaques chaudes de faire fondre la substance thermofusible.

FIG.1

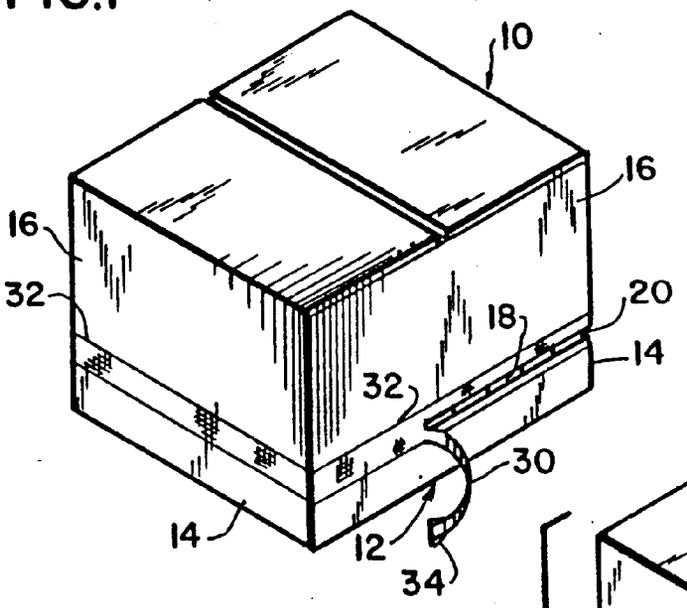


FIG.2

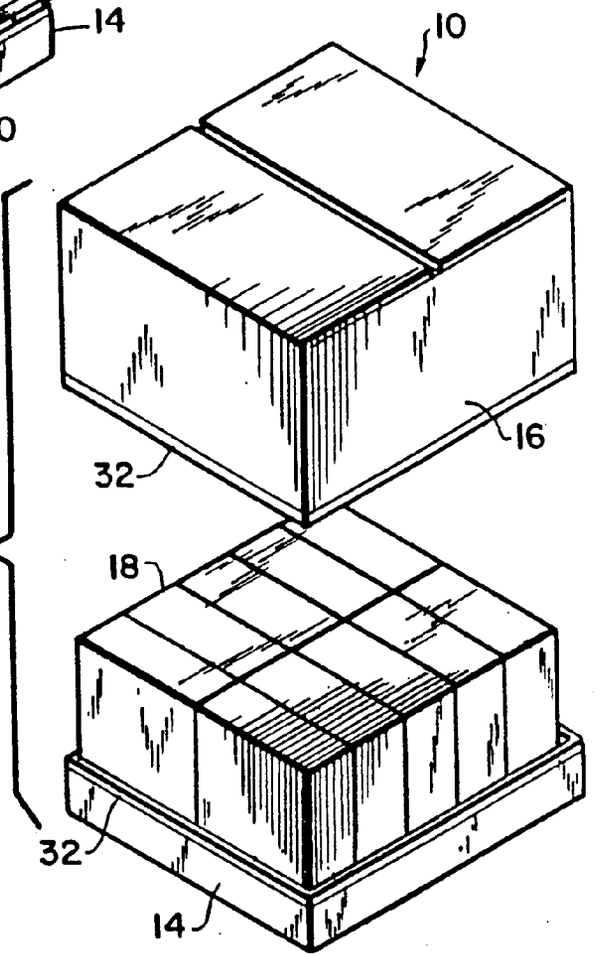


FIG.3

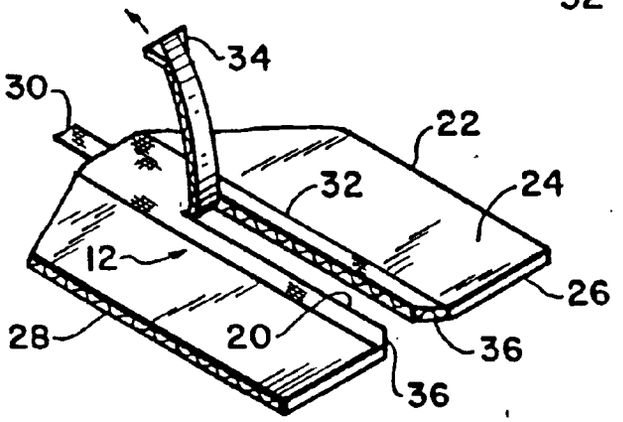

FIG.4

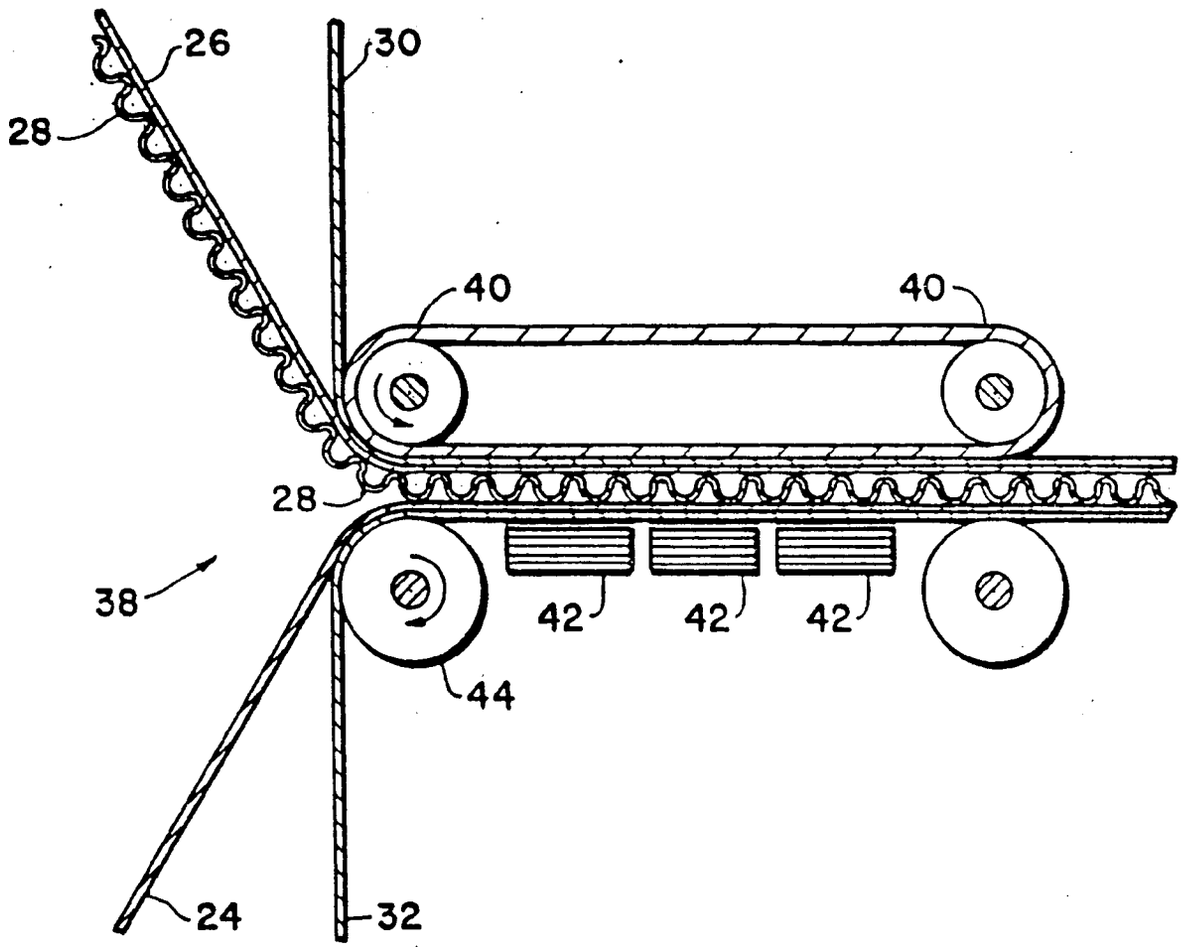


FIG.5