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(54) A PACKAGING UNIT FOR SHEET-LIKE MATERIAL

VERPACKUNGSEINHEIT FÜR BLATTARTIGES MATERIAL

EMBALLAGE POUR MATERIAU EN FEUILLES

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Description

Technical field

The present invention relates to a packaging unit for all types of sheet like material. The packaging unit is particularly suited for loose paper sheets in various numbers, which have been collected into a bundle or stack. The sheet size of the material, preferably paper, may vary and the size of the packaging unit is adapted accordingly. The packaging unit is suited for packaging standard paper sizes, such as A4 (210 x 297 mm) and A3 (420 x 297 mm). Other paper sizes that the packaging unit can be used for include US Quarto (215 x 279 mm) and American Foolscap (215 x 330 mm), which are typical North American paper sizes.

The packaging unit may be made from any known packaging unit material. A particularly suitable material is corrugated fibreboard. Cardboard may also be used with advantage. The corrugated fibreboard used may have a brown colour, i.e. a corrugated fibreboard in which all of the material layers are comprised of paper which has been manufactured from unbleached or semi-bleached pulp. From the aspect of general appearance and when perhaps print is to be applied to the packaging unit, that side of the fibreboard which is to form the outer surface of the packaging unit will be advantageously produced from a bleached, preferably fully bleached, pulp or from paper which has been given a white colour in some other way.

When the packaging unit is to be used for paper or paper bundles of A4 size, the surface weight of the corrugated fibreboard will conveniently lie within the range of 100-200 g/m^2.

Description of the prior art

As an alternative to packaging five hundred sheets, forming a ream, in wrapping paper which is sealed around the bundle or ream, whereafter a number of such reams are packed in the final packaging unit, it has become usual in recent times to stack together, for instance, two thousand five hundred loose sheets and to pack these sheets directly in the final packaging unit, for instance in some form of box fitted with some type of lid.

Since in this case the paper is not wrapped and protected in a paper wrapper, the packaging unit must be capable of protecting the paper from varying moisture contents of the ambient air, for instance. This is achieved by providing the material from which the packaging unit is made with a barrier surface on any of the outer surfaces of the material or within said material.

A packaging unit used, for instance, for a stack of thousands of loose paper sheets is sold on the market under the trade name NoNSToPBox. The structure and construction of this packaging unit are described in the Swedish Patent Application 9201748-2. The stack of loose paper sheets normally extends above the upper rim of the box and the number of paper sheets that project above the rim are covered solely by the lid.

Disclosure of the invention

Technical problems

When packaging units of this kind are opened up, i.e. when the lid is lifted and removed from the box, a number of paper sheets slide from the top of the stack and are spread over the surroundings.

Solution

The present invention provides a solution to the aforesaid problem and relates to a packaging unit for sheet like material, such as A4 paper, wherein the packaging unit comprises a box fitted with a lid, both of which have a rectangular shape and comprise a centre part, two side parts and two end wall parts and with regard to the box alternatively one outer and at least one inner end wall part at each end , which can be easily separated, wherein the box and/or the lid includes a moisture barrier, characterized in that the centre part of the lid (the upper part thereof) is at least partially broken through (perforated) along at least one line.

It is sufficient for the material to be broken through solely punctiformly along the line concerned. However, this perforation shall be so pronounced as to enable the user of the paper enclosed in the packaging unit to easily break the perforation, for instance with a finger of one hand, such as the thumb, so as to form at least one opening in the lid. Prior to breaking the perforation, the user will preferably lift the lid by one centimeter or thereabouts along the upper part of the box, so that the flap formed when breaking the perforation can be folded down against the top sheet in the stack and so that ambient air is caused to flow down into the packaging unit.

When a conventional lid is used and the lid is removed more or less quickly from the box, a certain vacuum (subpressure) is presumably created above the top sheet in the stack, causing a number of paper sheets to accompany the lid as it is removed from the stack and box. The occurrence of such subpressure is prevented when using the inventive lid.

Preferably, the material will be penetrated along a full line. This line, however, may have a wave shape. The perforation provided in the lid shall fulfil at least two requirements. One important requirement is that the user will not need to exert a heavy force in order to produce the flap in the lid and fold the flap down against the paper stack. Another important requirement is that the perforation shall be formed in a manner which will not essentially change the protection provided against the ingress of moisture.

According to one preferred embodiment of the invention, the upper part of the lid is perforated along two lines, each perforation is placed generally in the

centre of the lid and at its end wall part.

According to another preferred embodiment of the invention, the upper part of the lid is perforated along two lines, each perforation is placed generally in the centre of the lid and at its side part.

It will be understood that more than two sets of perforations may be provided in the upper part of the lid.

The perforations may have any form whatsoever. Two preferred shapes are a half moon shape and the shape of a truncated cone. In both cases, the base is unbroken, i.e. the material is not perforated along the base. Consequently, only a flap will be formed in the upper part of the lid. If the base of these shapes also is perforated, which is fully possible but not preferred, a loose part of the lid will be formed as the material surrounded by the perforation is pressed down against the paper stack.

It is important that the packaging unit includes a moisture barrier, preferably including both the lid and the box. For instance, the material from which the packaging unit is made may include one or more layers which will prevent the ingress of moisture. When the packaging material is comprised of corrugated paperboard, which includes two flat paper sheets (liner) which embrace a fluted paper sheet (fluting) it is preferred that anyone of the embracing paper sheets (liner) is provided with a moisture impermeable layer on one of its sides.

This moisture impermeable layer may comprise polyethylene or any other known plastic material having a surface weight of (or a corresponding thickness) 10-15 grams per m^2. Another alternative is to coat a surface of the packaging material and/or a surface of a material layer included in the packaging material with a layer of latex emulsion and/or wax. This latter is preferred when the packaging material is to be recycled.

As before mentioned, the moisture barrier may also be within the actual packaging material, for instance in the centre thereof.

Advantages

The inventive packaging unit prevents paper sheets from leaving the stack of loose paper sheets in greater or smaller numbers and in an uncontrollable fashion, which loose paper sheets being lifted over, for instance, to a copying machine subsequent to removing the lid of the packaging unit. The paper stack is therewith intact and all of said sheets can be used for the intended purpose, for instance copying. This advantage is obtained while avoiding undesirable variations in the moisture content of the paper sheets at the same time.

Brief description of the drawings

Figure 1 illustrates a first embodiment of an inventive packaging unit.

Figure 2 illustrates a second and preferred embodiment of the inventive packaging unit.

Figure 3 shows that second embodiment of the invention after having broken the perforations in the lid and having removed said lid, and also shows all parts of the box folded down onto the box supporting surface, so as to expose the stack of loose paper sheets.

Best mode of carrying out the invention

Various exemplifying embodiments of the invention will now be described with reference to the Figures in the drawing, and certain parts of the inventive packaging unit will be described in more detail.

Figure 1 illustrates a traditional packaging unit comprising a box 1 and a lid 2. This box includes a bottom or centre part 3, two long sides 4 and two short sides or end walls 5. Normally, at least one of the parts of the box will include outwardly projecting, smaller parts by means of which an erected box can be produced from a box blank, i.e. where certain parts of the box are fixed together, for instance with the aid of melt glue, pins or staples. (These parts are not shown in the Figure). The same applies to the lid. The lid also comprises an upper part or centre part 6, two long sides 7 and two short sides or end walls 8. Optimal use is made of the volumetric capacity of the packaging unit by extending the stack of loose paper sheets several centimeters above the upper rim of the box and therewith above the box opening (not shown in the Figure). The packaging unit is held together during transportation and storage by means, for instance, of one or more bands, suitably plastic bands (not shown in the Figure either), among other things.

When the paper, for instance the copying paper, is to be used, these plastic bands are first clipped or cut. The lid 2 is then lifted slightly while at the same time, or immediately thereafter, pressing the thumbs of the user for instance against the lid in the vicinity of the perforations 9 formed in the centre of the lid, as seen in its longitudinal direction, and at the edges of the lid, so as to form two half moon shaped flaps. The lid is then lifted or drawn up and away from the box, so as to expose the upper part of the intact paper stack, whereafter an appropriate bundle of copying paper can be transferred to the copying machine.

Figure 2 illustrates a packaging unit of the kind described in more detail in the Swedish Patent Application 9201748-2. The lid of this packaging unit is similar to the lid shown in Figure 2 and has an upper part or centre part 10, two long sides 11 and two short sides or end walls 12. The only difference is that in this case, perforations 13 are provided in the centre of the lid short sides, in the proximity of the lid edges, in the shape of a truncated cone. In this case, the box is comprised of a bottom or centre part 14, two long sides 15 and two inner end wall parts 16 and two outer end wall parts 17. The lower part of the inner end wall part 16, which in this case is divided into two parts of equal size, is fastened to the outer end wall part 17 by means of melt glue for instance. As will be seen from the Figure, the surface

area of the outer end wall part 17 is slightly smaller than the surface area of the inner end wall part 16. This is because the outer end wall part is slightly conical from the bottom of the box and upwards, the conicity of the outer end wall part being more pronounced at the uppermost part of the outer end wall part. This end wall part has two mutually identical apertures 18 formed in the material on a respective side of the flap 19. The flap 19 can be gripped and folded outwards, by inserting a finger into the aperture 18 and gripping the flap. The flap 19 is then pulled by the user, so that the upper part of the outer end wall part 17 will lie outside the end wall part 12 of the lid. The same procedure is followed on the opposite end wall of the box. After folding out the flaps 19, the user is able to insert the fingers of respective hands into the larger apertures now formed and move the packaging unit and its contents comfortably to a copying machine, for instance.

The use of plastic wrapping bands can be omitted for the transportation and storage of this type of packaging unit. When the packaging unit is to be opened, the user need only place his/her hands on the end walls of the box and lift the lid slightly while, for instance, pressing with the thumbs against the lid at the perforations 13, which have the shape of a truncated cone, so as to form two flaps for equalizing the air pressure immediately beneath the lid and externally thereof. The lid is then removed to expose an intact stack of loose paper sheets 20. As previously mentioned, the height of the stack of free paper sheets 20 is greater than the height of the box.

Figure 3 illustrates by way of example how the box can be manipulated to provide easy access to the paper stack.

As earlier mentioned, the lower part of the outer end wall part 17 of the box is fastened, for instance with melt glue, to a few small surfaces 21 on the inner end wall part 16 of the box. This fastening is broken and the two outer end wall parts 17 are folded down against the box supporting surface. The two side parts 15 are then folded down against this supporting surface, accompanied by the inner end wall parts 16. The box can be folded back to its erected form and be sealed by means of the lid, subsequent to having removed the paper stack 20 from the packaging unit and inserting the paper into a copying machine, for instance. If the packaging unit is to be recycled, for instance, it is beneficial to keep the unit in a flat state, for space reasons.

It is not necessary to fold down the whole of the box, as in the case of the Figure 3 illustration, since it will suffice to loosen the outer part 17 on one end wall from the inner end wall part 16 and fold down said outer part 17 in the illustrated manner, and to fold the inner end wall part 16 aside, the inner end wall part 16 in this case comprising two parts of equal size. The user can then reach the paper at one short side thereof. Such a packaging unit, including the box, is still easier to reseal.

The outer end wall part 17 can also be fastened to solely one half of the inner end wall part 16, and therewith enable one long side 15 of the box to be readily folded down against the box supporting surface, after removing the lid, so as to enable the paper stack to be reached from one long side of the paper.

The paper stack 20 is normally inserted into the magazine of the copying machine, either by dividing the paper stack into a number of bundles, which are inserted individually into the magazine, or by gripping the entire paper stack and lifting the stack from the bottom or centre part 14 of the box and inserting the stack into the magazine.

It is also possible to insert an additional supportive sheet of sufficiently rigid and strong material, such as cardboard, for instance, which has generally the same size as the paper and which covers the bottom 14. This supportive sheet functions as a carrying support when moving the paper stack 20 from the packaging unit to the magazine. This additional supportive sheet will advantageously include an outwardly projecting wing or lip at one long side thereof generally in the centre. Subsequent to having placed this additional supportive sheet of material and the overlying paper stack onto the bottom of the magazine, the additional supportive sheet can be removed by gripping the wing or lip and pulling out the supportive sheet from the packaging unit.

Alternatively, the box bottom 14 and the outer end wall parts 17 joined thereto can be used as a supportive surface when inserting the paper stack 20 into the magazine of the copying machine. It is necessary to first remove the two long sides 15 and the two inner end wall parts 16 of the box when applying this latter alternative. This is made possible by the fact that the junction between the bottom 14 of the box and its long side 15 are at least partially broken through (perforated). The user can then remove mentioned parts from the original box by force of hand. It is also possible to place a wire of suitable strength in the box in the aforesaid position. After having folded down the box in the manner shown in Figure 3, the user grips one end of the wire, for instance shaped to form a loop, and tears the long side 15 and the inner end wall parts 16 joined thereto loose from the box. The user then grips respective outer end wall parts 17 and moves everything to the magazine of the copying machine. It is also appropriate in this case for the box bottom 14 and its one long side to include an outwardly projecting wing or lip which is gripped by the user when removing the supportive surface, i.e. the described parts of the original box, from the magazine. Such a wing or lip can be readily produced, by allowing the weakening or the wire to make a bend in and up on the one long side 15 of the box at the middle thereof counted lengthwise.

Claims

1. A packaging unit for sheet like material, such as paper of A4 size, comprising a box (1) provided with a lid (2), both of which have a rectangular shape and include a centre part (3, 6, 14, 10), two side

parts (4, 7, 15, 11) and two end wall parts (5, 8, 16, 12), or in the case of the box alternatively one outer (17) and at least one inner end wall part (16) at each end which can be readily separated, wherein the box and/or the lid includes/include a moisture barrier, **characterized** in that the centre part (the upper part) of the lid is at least partially broken through (perforated) along at least one line (9, 13).

2. A packaging unit according to Claim 1, **characterized** in that the centre part (upper part) of the lid is perforated along two lines (13), wherein the perforation is placed generally in the centre of the lid and at its end wall part.

3. A packaging unit according to Claim 1, **characterized** in that the centre part (upper part) of the lid is perforated along two lines (9), wherein each line of perforations is placed generally in the centre of the lid and at its side part.

4. A packaging unit according to Claims 1-3, **characterized** in that the perforation or perforations (9) has or have a half moon shape.

5. A packaging unit according to Claims 1-3, **characterized** in that the perforation or perforations (13) has or have the shape of a truncated cone.

6. A packaging unit according to Claims 1-5, **characterized** in that the perforation or line is waveshaped.

Patentansprüche

1. Verpackungseinheit für blattartiges Material, wie Papier der Größe A4, umfassend eine mit einem Deckel (2) versehene Schachtel (1), von denen beide eine rechteckige Form besitzen und ein Mittelteil (3, 6, 14, 10), zwei Seitenteile (4, 7, 15, 11) und zwei Stirnwandteile (5, 8, 16, 12) oder im Fall der Schachtel alternativ an jedem Ende ein äußeres (17) und mindestens ein inneres Stirnwandteil (16), welche leicht voneinander getrennt werden können, umfassen, wobei die Schachtel und/oder der Deckel eine Feuchtigkeitsbarriere einschließt/einschließen, dadurch gekennzeichnet, daß das Mittelteil (das obere Teil) des Deckels mindestens teilweise entlang mindestens einer Linie (9, 13) durchbrochen (perforiert) ist.

2. Verpackungseinheit gemäß Anspruch 1, dadurch gekennzeichnet, daß das Mittelteil (das obere Teil) des Deckels entlang zweier Linien (13) perforiert ist, wobei die Perforation im allgemeinen in der Mitte des Deckels und bei dessen Stirnwandteil angeordnet ist.

3. Verpackungseinheit gemäß Anspruch 1, dadurch gekennzeichnet, daß das Mittelteil (das obere Teil) des Deckels entlang zweier Linien (9) perforiert ist, wobei jede Perforationslinie im allgemeinen in der Mitte des Deckels und bei dessen Seitenteil angeordnet ist.

4. Verpackungseinheit gemäß den Ansprüchen 1 - 3, dadurch gekennzeichnet, daß die Perforation oder die Perforationen (9) eine Halbmondform besitzt oder besitzen.

5. Verpackungseinheit gemäß den Ansprüchen 1 - 3, dadurch gekennzeichnet, daß die Perforation oder die Perforationen (13) die Form eines Kegelstumpfs besitzt oder besitzen.

6. Verpackungseinheit gemäß den Ansprüchen 1 - 5, dadurch gekennzeichnet, daß die Perforation oder Linie wellenförmig ist.

Revendications

1. Unité de conditionnement pour matériau en feuilles tel que du papier A4, comprenant une boîte (1) pourvue d'un couvercle (2), les deux ayant une forme rectangulaire et incluant une partie centrale (3, 6, 14, 10) deux parties latérales (4, 7, 15, 44) et deux parties d'extrémité (5, 8, 16, 12) ou, alternativement, une extrémité extérieure (17) et au moins une extrémité intérieure (16) de paroi de chaque côté, qui peuvent être aisément séparées, dans laquelle la boîte et/ou le couvercle inclût (incluent) une barrière d'humidité, caractérisée en ce que la partie centrale (la partie supérieure) au couvercle est au moins partiellement brisée (perforée) le long d'au moins une ligne (9, 13).

2. Unité de conditionnement selon la revendication 1, caractérisée en ce que la partie centrale (partie supérieure) du couvercle est perforée le long de deux lignes (13), dans laquelle la perforation est disposée généralement dans le centre du couvercle et sur ses parois d'extrémités.

3. Unité de conditionnement selon la revendication 1, caractérisée en ce que la partie centrale (partie supérieure) du couvercle est perforée selon deux lignes (9), dans laquelle chaque ligne de perforations est disposée généralement dans le centre du couvercle et sur ses côtés.

4. Unité de conditionnement selon l'une quelconque des revendications 1 à 3, caractérisée en ce que la ou les perforations ont une forme en demi-lune.

5. Unité de conditionnement selon l'une quelconque des revendications 1 à 3, caractérisée en ce que la ou les perforations ont une forme de tronc de cône.

6. Unité de conditionnement selon les revendications 1 à 5, caractérisée en ce que la perforation ou ligne est ondulée.

Fig.1

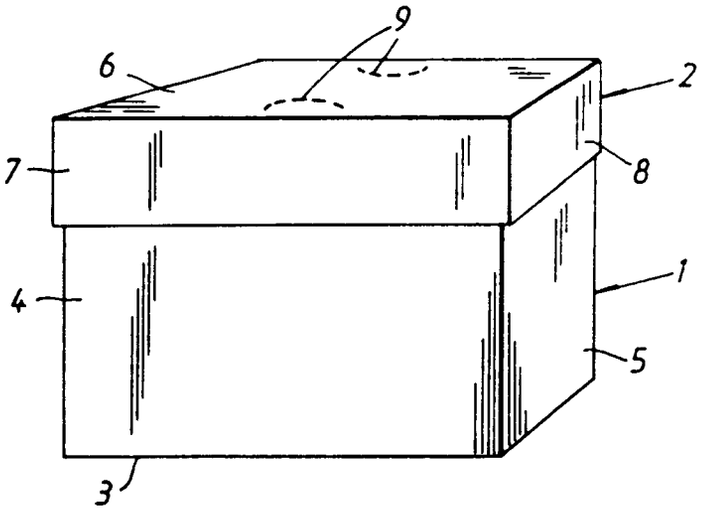


Fig.2

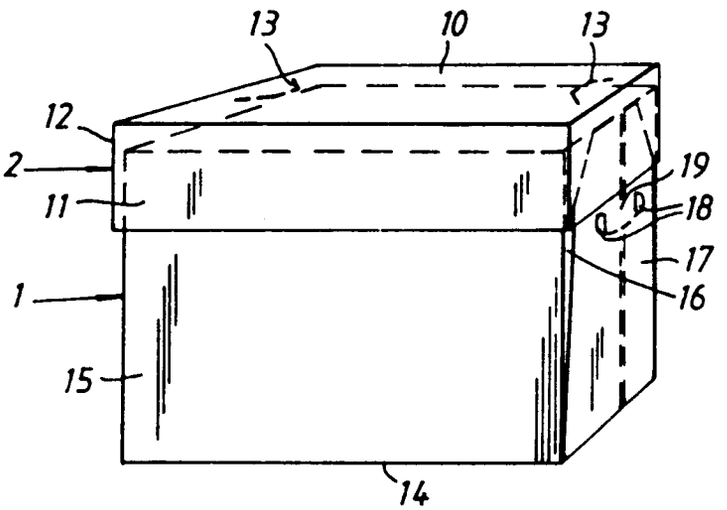


Fig.3

