

Description

The present invention relates to a packaging container for a plurality of recording media which are stacked one on top of the other and are in the form of a circle, in particular tape-like recording media wound as rolls of tape on annular hubs or flanged reels, a central holder being assigned to at least one of the recording media, and at least two bottom and lid parts which, in plan view, are slightly larger than the plan view area of the recording media and which are equipped with detachably connectable toothed edge parts being provided, and bottom and lid parts having essentially identical toothed edge parts and a longitudinal tooth system having a separation line around the circumference of the container.

Recording media are understood as being any type of recording media in the form of a circle, for example recording media which can be wound up, in particular magnetic recording media, for example photographic films, magnetic films and magnetic tapes, and any type of recording disks, such as compact disks, gramophone disks, video disks and computer disks.

Magnetic tapes are commercially available wound on flangeless hubs or flanged reels according to DIN 45,517. The hubs or reels are flat on both end faces and can therefore be locked only by additional locking means when a plurality of the said hubs or reels are stacked one on top of the other. The roll of tape is usually despatched packed in a cardboard box having shell-like plastic liners. This packaging is uneconomical and inconvenient to handle. The use of liners made of polystyrene foam or similar foam materials is disadvantageous with regard to simple waste disposal.

DE-U-8034894 and 8109502 disclose cake box-like packagings for wound magnetic tapes or recording disks, which, however, have the disadvantage that the upper part and lower part differ in shape and are therefore expensive to produce.

DE-A-2,312,400 furthermore discloses transport protection for video disks, which consists of a shipment container formed from two combinable elements, the bottom surfaces having depressions in the region of the video disk information relief to be protected. The known shipment container has, for example, a roughly quadratic plan and a roughly rectangular or oblique separation line. For example, the shipment container possesses tooth systems even transverse to the wall and along the peripheral direction and the two elements may be identical in shape. However, a large number of direct gaps leading from the outside into the interior are present, so that inevitably dust and impurities can enter.

The arrangement of the separation lines is such that the video disks cannot enter between the container elements and open them. Since the video disks are not dust-sensitive, there is also no need to provide for a high level of protection from dust in the design of the separation lines.

DE-U-8229387 discloses a housing for compact cassettes, which has tooth systems on the peripheral edge which, however, are intended to increase the torsional rigidity of the housing. The upper and lower parts of the housing differ from one another, at least with respect to the tooth systems.

US-A-3 252 568 discloses a packaging container for recording media, having a central holder and having bottom and lid parts which are provided with detachably connectable identical longitudinal toothed edge parts which extend continuously around the circumference of the container. In addition, the bottom and lid parts are connected to one another by means of pegs and indentations. Apart from at the positions of these pegs and indentations, when the container is closed there are, over the whole circumference, gaps which lead directly from the outside into the interior of the container and, in the case of penetrating dust particles and other impurities, may have adverse effects on recording and playback.

It is an object of the present invention to improve a packaging container of the type defined at the outset with regard to absolute protection against dust and to produce said container more economically.

5 We have found that this object is achieved by a packaging container as claimed in claim 1.

The tooth systems increase both the stability of the container and the protection against penetrating dust or dirt particles.

10 In practice, the container may possess a cake box shape having the contour of an even-numbered polygon, in particular an octagonal shape.

Advantageously, the height of the largest toothed parts of the longitudinal tooth system corresponds
15 roughly to the internal height of the container. This makes it easy to grip the recording media at the circumference, and handling is thus facilitated. In an advantageous embodiment, no more than a few linear gaps should lead into the interior of the container from the separation
20 line of the longitudinal tooth system.

The transverse tooth system is thus provided continuously around the entire circumference of the container or extends essentially over the circumference.

In practice, the longitudinal tooth system may
25 have a visible separation line of zig-zag shape, with the result that the forces uniting the container parts can be increased. It is also advantageous from the point of view of production if the individual toothed parts are provided with beveled tooth flanks. To facilitate handling,
30 the central holder can be in the form of a pin having at least one axial locking groove.

Advantageously, the pin may be formed from two pin end parts, and furthermore the pin end parts may have tooth means on the end face.

35 It is also advantageous if the tooth means consist of intermeshing annular sector parts. For transport in the vertical position, it is advantageous if the bottom and lid parts have essentially flat outer surfaces which have at most shallow indentations and raised

stacking areas. In this transport position, the connecting forces between bottom and lid parts play a particularly important role.

For stacking only bottom parts or only lid parts one on top of the other, it is advantageous if the outer surface of the bottom part (lid part) has a circumferential groove as a stacking indentation, resulting in a radially inner raised stacking area, and the toothed edge parts of the bottom part (lid part) have support surfaces for the said raised stacking area of the bottom part (lid part).

For stacking the complete containers or the bottom and lid parts in any sequence, the stacking indentations and raised areas on base and lid parts can be such that they fit into one another, in particular are identical.

Embodiments of the invention are illustrated in the drawing and described below.

In the drawings,

- Figure 1 shows an approximately octagonal container having a zig-zag separation line,
Figure 2 shows a first section through the lid part of the container from Figure 1 (along line A-A'),
Figure 3 shows a second section through the bottom part of the container from Figure 1 (along line B-B'),
Figure 4 shows an octagonal container having an oblique zig-zag separation line,
Figure 5 shows a first section through the container from Figure 4 (along line C-C') and
Figure 6 shows a second section through the container from Figure 4 (along line D-D').

The container 5 from Figure 1 has a multi-step zig-zag separation line 6, the height of the largest toothed parts 7A and 7B corresponding to the internal height h of the container. The transverse tooth system 8 recognizable in the sector section of Figure 1 is in the form of an inner edge 9 on the largest toothed part 7A or 7B, which engages a corresponding groove 10 of the

particular baseplate 11B or 11A of the bottom or lid part 12, respectively. The recording media 14 are housed in the interior 13 of the container 5.

5 The container 5 consists, for example, of Styropor® (registered trade mark of BASF Aktiengesellschaft, Ludwigshafen) but may consist of any suitable foamed plastic or other suitable materials which can be processed by pressing, casting, injection molding or deep drawing.

10 The lid part 12 in Figure 2, which, like the container parts to be described below, is identical to its counterpart, is formed by the essentially flat baseplate 11A, on which the recording media 14 can lie flat, and by edge parts which comprise the largest
15 toothed parts 7A on the one hand and middle edge parts 15 on the other hand, the tooth recess 16 being provided between these middle edge parts. The middle edge parts 15 extend in height as far as the central plane M of the container and have toothed edge parts 17 and 18 which are
20 preferably adjacent to one another in the longitudinal direction and whose shapes are such that they fit into one another. The toothed parts 7A (7B) are likewise provided on their end faces with toothed edge parts, in this case webs 19 and grooves 20, the webs 19 engaging
25 sector grooves 21 (Figure 3) when the two container parts are combined. The tooth elements of the edge parts 17 to 21 form the transverse tooth system, which preferably extends over the entire circumference of the container 5, or which extends essentially, for example, with rela-
30 tively small interrupted sections in which a direct gap leads to the interior, around the circumference.

A central holder of container 5 is in the form of a pin end 22 having two toothed sector webs 23 on the end face, each of which extends only over a circular sector
35 of 90°. The pin ends 22 are also provided with two locking grooves 24 which are recognizable in Figure 3 and each of which is formed between the sector webs 23 and is provided with support surfaces 25 for the sector webs 23. In Figure 3, the large toothed part 7A is also provided

with two lateral webs 26 which are intended for engaging lateral grooves 27 as middle edge parts 15.

Both lid and bottom parts 12 are thus identical and can be produced in the same mold. After two lid parts 5 12 have been combined, it being necessary for one part to be rotated 90° with respect to the other and inverted, the recording media 14 are safely protected therein. Depending on the gripping effect of the surface of the plastic used, it may be necessary, as shown in Figure 1, 10 to use pieces of adhesive tape 28, which extend along the separation line 6, to ensure reliable closure of the container parts 12, particularly if the container is also to be transported on edge, on one of its resting surfaces 29. Banding of the entire container can also be provided 15 for this purpose. The bottom and lid parts 12 have essentially flat outer surfaces which, in Figure 1, possess flat stacking indentations 42 and raised areas 43 in the form of circular sectors.

Figure 4 shows another container 30 which, in 20 contrast to the multi-step zig-zag separation line 6, has an oblique zig-zag separation line 31.

Oblique, trapezoidal toothed parts 32 are identical to one another and are each provided symmetrically with respect to each corner. The toothed parts 32 have 25 outer webs 33 and inner recesses 34 as edge parts on their end faces, the outer webs 33 engaging the corner grooves 35 when the two container parts 36 are combined. The baseplate 37 is in turn flat, to ensure that there is no slipping of the recording media, in particular of the 30 self-supporting magnetic tape roll, which in this case too has been wound on flangeless hubs 38.

In the present container 30, the oblique edges 39 are not provided with transverse tooth means, which, however, can readily be supplemented in such a way that 35 one edge is provided with a web and the other edge of the same toothed part with a matching groove.

The central holder 40 in this case is in the form of pin ends 40A and 40B, between which a space is provided. If it is necessary to transport a container in the

upright position, especially because of the weight of the recording media, for example half inch video tape roll, and/or because of the container material, the pin ends can be provided with tooth means on their end faces, similarly to Figures 1 to 3 or in another suitable manner, to increase the stability of the filled container to lateral opening and disintegration of the stack of recording media. The pin ends 40A and 40B are provided with axial locking grooves 41.

10 In Figure 4, it can be seen that a circumferential groove 44 and a resulting raised area 45 are provided as stacking means. The inner recesses 34 have dimensions such that two lid or bottom parts 36 can be stacked one on top of the other in the same position
15 (toothed parts 32 pointing upward), the outer edge of the raised area 45 resting on the horizontal support surfaces of the inner recess 34.

Hence, the individual lid or bottom parts can very advantageously be used as a product support and
20 protection means in the production of the recording media.

A packaging container for a plurality of recording media in the form of a circle is formed from identical container parts which, in combination, have a continuous longitudinal tooth system in the circumferential
25 direction and at least one partial transverse tooth system in the radial direction. Toothed edge parts of the container parts engage one another. Stacking means are provided.

30 Recording media are any type of recording media in the form of a circle, such as wound film, magnetic tapes or recording disks.



Claims

1. A packaging container for a plurality of recording media which are stacked one on top of the other and are in the form of a circle, in particular tape-like recording media (14) wound as rolls of tape on annular hubs (38) or flanged reels, a central holder (22) being assigned to at least one of the recording media, and at least two bottom and lid parts (12, 36) which, in plan view, are slightly larger than the plan view area of the recording media (14) and which are equipped with detachably connectable toothed edge parts being provided, and bottom and lid parts (12, 36) having essentially identical toothed edge parts and a longitudinal tooth system having a separation line (6, 31) around the circumference of the container, said packaging container comprising a plurality of tooth parts (7A, 7B, 15 and 32), forming the longitudinal tooth system, and a transverse tooth system (17-21 and 33-35) which is provided around the circumference in the radial direction of the container (5, 30) so that no linear gap leads into the interior of the container (5, 30) from the separation line (6, 31) of the longitudinal tooth system.
2. A container as claimed in claim 1, wherein the container (5, 30) possesses a cake box shape having the contour of an even-numbered polygon, in particular an octagonal shape.
3. A container as claimed in claim 1 or 2, wherein the height of the largest toothed parts (7A, 7B, 32) of the longitudinal tooth system corresponds roughly to the internal height (h) of the container (5, 30).
4. A container as claimed in any of claims 1 to 3, wherein the longitudinal tooth system has a visible separation line (6, 31) of zig-zag shape.
5. A container as claimed in any of claims 1 to 4, wherein the individual toothed parts (32) are provided with beveled tooth flanks (39).
6. A container as claimed in any of claims 1 to 5, wherein the central holder is in the form of a pin



(22, 40) having at least one axial locking groove (24 or 41).

7. A container as claimed in claim 6, wherein the pin is formed from two pin end parts (22 or 40A and 40B).

5 8. A container as claimed in claim 7, wherein the pin end parts (22) have tooth means (23, 25) on the end face.

9. A container as claimed in claims 7 and 8, wherein the tooth means consist of intermeshing annular sector
10 parts (23, 25).

10. A container as claimed in any of claims 1 to 9, wherein the bottom and lid parts have essentially flat outer surfaces which have at most shallow indentations (42) and raised stacking areas (43).

15 11. A container as claimed in claim 10, wherein the outer surface of the bottom part (lid part) (36) has a circumferential groove (44) as a stacking indentation, resulting in a radially inner raised stacking area (45), and the toothed edge parts (32) of the bottom part (lid
20 part) (36) have support surfaces (inner recesses 34) for the said raised stacking area (45) of the bottom part (lid part) (36).

12. A container as claimed in claim 11, wherein the stacking indentations and raised areas (42 and 43,
25 respectively) on bottom and lid parts (12) fit into one another, in particular are identical.



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lar tape-like recording media (14) wound as rolls of tape on annular hubs (38) or flanged reels, a central holder (22) being assigned to at least one of the recording media, and at least two bottom and lid parts (12, 36) which, in plan view, are slightly larger than the plan view area of the recording media (14) and which are equipped with detachably connectable toothed edge parts being provided, and bottom and lid parts (12, 36) having essentially identical toothed edge parts and a longitudinal tooth system having a separation line (6, 31) around the circumference of the container, said packaging container comprising a plurality of tooth parts (7A, 7B, 15 and 32), forming the longitudinal tooth system, and a transverse tooth system (17-21 and 33-35) which is provided around the circumference in the radial direction of the container (5, 30) so that no linear gap leads into the interior of the container (5, 30) from the separation line (6, 31) of the longitudinal tooth system.

2. A container as claimed in claim 1, wherein the container (5, 30) possesses a cake box shape having the contour of an even-numbered polygon, in particular an octagonal shape.
3. A container as claimed in claim 1 or 2, wherein the height of the largest toothed parts (7A, 7B, 32) of the longitudinal tooth system corresponds roughly to the internal height (h) of the container (5, 30).
4. A container as claimed in any of claims 1 to 3, wherein the longitudinal tooth system has a visible separation line (6, 31) of zig-zag shape.
5. A container as claimed in any of claims 1 to 4, wherein the individual toothed parts (32) are provided with beveled tooth flanks (39).
6. A container as claimed in any of claims 1 to 5, wherein the central holder is in the form of a pin (22, 40) having at least one axial locking groove (24 or 41).
7. A container as claimed in claim 6, wherein the pin is formed from two pin end parts (22 or 40A and 40B).
8. A container as claimed in claim 7, wherein the pin end parts (22) have tooth means (23, 25) on the end face.
9. A container as claimed in claims 7 and 8, wherein the tooth means consist of intermeshing annular sector parts (23, 25).

[As printed]

Claims

1. A packaging container for a plurality of recording media which are stacked one on top of the other and are in the form of a circle, in particu-



10. A container as claimed in any of claims 1 to 9, wherein the bottom and lid parts have essentially flat outer surfaces which have at most shallow indentations (42) and raised stacking areas (43).
11. A container as claimed in claim 10, wherein the outer surface of the bottom part (lid part) (36) has a circumferential groove (44) as a stacking indentation, resulting in a radially inner raised stacking area (45), and the toothed edge parts (32) of the bottom part (lid part) (36) have support surfaces (inner recesses 34) for the said raised stacking area (45) of the bottom part (lid part) (36).
12. A container as claimed in claim 11, wherein the stacking indentations and raised areas (42 and 43, respectively) on bottom and lid parts (12) fit into one another, in particular are identical.

[As printed]
Revendications

1. Récipient d'emballage pour une pluralité de supports d'enregistrement empilés les uns sur les autres, se présentant sous une forme circulaire, en particulier un support d'enregistrement (14) se présentant sous forme d'enroulement de ruban ou de bobine, enroulé sur des noyaux de bobine annulaires (38) ou des bobines à joues, une fixation centrale (22) étant associée à au moins l'un des supports d'enregistrement et sont prévues au moins deux parties de fond et de couvercle (12, 36), réalisées, en vue de dessus, un peu plus grandes que la surface en vue de dessus des supports d'enregistrement (14), pourvues de parties de bordure dentées susceptibles d'être reliées de façon désolidarisable, et où les parties de fond et de couvercle (12, 36) présentent, autour de la périphérie du récipient, des parties de bordure dentées sensiblement identiques et une denture longitudinale avec un joint de séparation (6, 31), caractérisé par une pluralité, formant la denture longitudinale, de parties de dent (7A, 7B, 15 ou 32) ainsi qu'une denture transversale (17 à 21, ou 33 à 35) prévues autour de la périphérie, dans la direction radiale du récipient (5, 30), de sorte qu'aucun interstice rectiligne ne parte du joint de séparation (6, 31) de la denture longitudinale, pour passer dans l'espace intérieur du récipient (5, 30).
2. Récipient selon la revendication 1, caractérisé en ce que le récipient (5, 30) présente une forme en moule à tarte, avec la forme de contour d'un polygone à nombre de côtés pairs, en particulier d'un octogone.
3. Récipient selon la revendication 1 ou 2, caractérisé en ce que la hauteur des grandes parties de dent (7A, 7B, 32) de la denture longitudinale correspond à peu près à la hauteur intérieure (h) du récipient (5, 30).
4. Récipient selon les revendications 1 à 3, caractérisé en ce que la denture longitudinale présente un joint de séparation visible (6, 31) ayant une forme en méandre.
5. Récipient selon les revendications 1 à 4, caractérisé en ce que les parties de dent individuelles (32) sont réalisées avec des flancs de dent (39) chanfreinés.
6. Récipient selon les revendications 1 à 5, caractérisé en ce que la fixation centrale est réalisée sous forme de tourillon (22, 40) avec au moins une rainure de prise axiale (24, ou 31).
7. Récipient selon la revendication 6, caractérisé en ce que le tourillon est formé de deux moignons de tourillon (22, ou 40A et 40B).
8. Récipient selon la revendication 7, caractérisé en ce que les parties de moignon de tourillon (22) présentent en face frontale un moyen de denture (23, 25).
9. Récipient selon les revendications 7 et 8, caractérisé en ce que les moyens de denture sont composés de parties de secteur d'anneau de cercle (23, 25) s'ajustant les unes dans les autres.
10. Récipient selon les revendications 1 à 9, caractérisé en ce que les parties de fond et de couvercle présentent des surfaces extérieures sensiblement planes, présentant des cavités d'empilement (42) et des bossages d'empilement (43) plans, au niveau supérieur.
11. Récipient selon la revendication 10, caractérisé en ce que la surface extérieure de la partie de fond (partie de couvercle) (36) présente une rainure de bordure périphérique (44) servant de cavité d'empilement, de sorte qu'en résulte un bossage d'empilement (45) situé intérieurement radialement, et les parties de bordure de denture (32) de la partie de fond (partie de couvercle) (36) présentent des surfaces de pose (évidements intérieurs) (34) pour ledit bossage d'empilement (45) de la partie de fond (partie de couvercle) (36).

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12. Récipient selon la revendications 11, caractérisé en ce que les cavités d'empilement et les bossages d'empilement (42, ou 43) sont réalisés sur les parties de fond et de couvercle (12) en s'ajustant les uns dans les autres, en particulier en étant identiques.