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Description

The present invention relates to a braking and tape tensioning device for tape cassettes having a housing and flanged reels contained therein, in which one or more flanges carry toothing at the peripheral edge and a spring element interacts with the toothing in the braking position but not in the release position, and an actuating element provided on the apparatus enters the housing and transfers the spring element from its braking position to its release position and positioning elements provided on the cassette guide each spring element from the braking position to the release position and [lacuna], and a tape cassette, in particular a magnetic tape cassette, possessing such a braking and tape tensioning device.

German Laid-Open Applications DOS 2,918,271, DOS 3,217,128 and DOS 2,910,783 describe reel brakes for the commercial cassettes of conventional video systems. These reel brakes consist of spring-mounted swivel levers which engage corresponding rectangular toothing on the peripheral edge of the flange and hence secure the reels against unintentional unwinding of the tape during handling or transport of the cassette.

German Laid-Open Application DOS 3,007,948 describes a video cassette which possesses a brake system which essentially consists of a fulcrum bracket which can be actuated from outside the cassette and possesses one pivotably hinged brake lever for each reel, the brake lever interacting with a control surface on the back wall of the cassette in such a way that the levers engage the toothing of the reel flanges after only a short displacement of the fulcrum bracket and, in the course of the residual displacement of the fulcrum bracket, eliminate any tape slack at the front of the cassette by rotation of the reels in opposite directions. This

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brake system meets both requirements, ie. elimination of slack tape and blocking of the reels to prevent unintentional unwinding of these, for example during transport. Because of its relatively large space requirement and fairly complicated construction (4 components: 1 fulcrum bracket, 2 bearing-mounted brake levers and 1 brake spring), it is unsuitable for cassettes which are to be produced in an economical manner, and in particular for miniature cassettes, eg. the 8 mm video cassette. Hence, the brake system below has been proposed in the specification for the 8 mm video cassette.

Two plate spring-like springs, for the two flange toothings, are mounted on a plastic base which can be moved from outside, so that each individual plate spring is assigned to a reel. In the disengaged position, each of these springs is deflected toward the central axis of the cassette, by projections provided on the housing, so that the ends of the springs are outside the particular flange toothing. If the brake is shifted toward the reels in order to arrest the latter, the springs are released by the stationary housing projections in the first part of the displacement so that they relax and in doing so move toward the flange toothing and engage it. An investigation has shown that, with this embodiment and a tooth spacing of 1.2 mm, it is possible to take up only about 0.6 mm of any slack tape along the front of the cassette. If the tooth spacing is 0.7 mm, which is the lower limit in practice for injection molding and in terms of operation, effective take-up of slack tape is increased to only 1.2 mm. (The numerical values for tape take-up are given without reference slack since there are at present hardly any apparatuses for the 8 mm system for determining average tape slack.) This is insufficient to ensure reliable operation of a cassette, since, particularly in the case of the special design of some cassettes with double front flaps, there is a danger that, even in the event of a small amount of slack tape,

the tape will become caught between the actual front flap and the dust flap behind this when the front flap is closed, and will become creased. (The numerical values given above relate to the 8 mm video cassette).

It is an object of the present invention to provide effective brakes for flanged reels in tape cassettes, and tape cassettes, particularly magnetic tape cassettes, which possess these and are simple to produce, by means of which slack tape can very substantially be eliminated.

We have found that this object is advantageously achieved according to the invention by a braking and tape tensioning device and by a tape cassette according to either of claims 1 or 16. Advantages obtainable by means of the characteristic features of claims 1 and 16 and of their appendant claims are:

a) the device and the tape cassette can be produced and assembled simply and economically,

b) the device and the cassette operate safely and are reliable,

c) the tape take-up effect can be varied by using different numbers of locking elements,

d) the brake forces can be varied by using different numbers of locking elements and spring elements, and

e) the device and the tape cassette can be reduced in size without altering the operational safety and reliability.

Examples of the invention are shown in the drawing and described below.

Fig.1 shows the plan view of an 8 mm video cassette which contains two reels having opposite toothing and a brake element, which is in the disengaged position on the left-hand side and in the engaged position on the right-hand side,

Fig.2 shows a novel reel brake having three pointed locking elements per reel,

Fig.3 corresponds to Fig.2 but with two locking elements per reel and

Fig.4, 5 and 6 show other novel reel brakes having 3

12

or 2 brake locking elements per reel.

A tape cassette, eg. an 8 mm video cassette, consists of the housing 1, the front flap 2 and the dust flap 3, between which the tape 4, when not threaded in the apparatus, is held by means of the guide elements 17a/b provided on the housing, and the reels 5 and 6 having hubs 13. The movement of the front flap 2 and of the dust flap 3 is described in, for example, British Patent 2,115,782 A. During operation, the tape 4 must be held under tension at the front of the cassette within narrow tolerances, since otherwise, when the flaps are closed, the flap ends would catch the tape 4, crease it and/or deflect it from the normal position.

The brake system consists of a brake base 9 which can be displaced by an actuating pin 25 entering from outside, and which is held, under compressive stress, against the reels 5 and 6 by a pressure spring 26 mounted between the housing 1 and the base. The base 9, which is usually made of plastic, is provided at the front with two plate spring-like, pointed springs 10 and 11 which are usually V-shaped and each of which is assigned to a reel 5 or 6. For more effective engagement, the springs 10 and 11 are arranged at an angle to the central transverse axis 27 of the cassette so that they point toward the associated reel. One reel flange in each case is provided in a conventional manner with toothing on the outer edge, this being sawtooth toothing in Figure 1. The type of flange toothing is of importance for the present invention only in that the engaging flank is advantageously radially oriented.

During the braking process, which takes place automatically when the cassette is removed from the apparatus, the teeth 7 and 8 of the flange toothing of the reels 5 and 6 are caused to engage the points of the springy locking elements 10 and 11 after a short idle displacement A of the base 9 toward the cassette front 28. In an unfavorable case, the locking elements

10 and 11 completely miss meeting the tooth flanks, so that the additional displacement B is first required before the effective engagement of tooth flanks and locking element. In conventional brakes possessing a single locking element per reel, B roughly corresponds to one tooth spacing of the toothing. Only the remaining displacement C can deflect the reels laterally within the tolerance between the bearing edge 14 of the reel 5 and the housing opening 15 and take up any slack of the tape section between the guide elements 17a and 17b at the front flap 3, by rotation of the reels 5 and 6 in opposite directions.

When the reels 5 and 6 are in the release position, the locking elements 10/11 are forced toward the central transverse axis 27 by deflection (cf. locking element 10 in Fig. 1, left-hand side) by stops 12a/b provided on the housing, so that the points of the locking elements (eg. 31 and 32 in Figure 2) are removed from the area of operation of reels 5 and 6.

Figures 3 and 4 show novel brakes having three locking elements 31 to 33 per reel, in various embodiments. Figures 3, 5 and 6 show further embodiments of the novel brake having two locking elements 34 and 35 per reel. In all of the brakes according to the invention, the reels shown have trapezoidal or rectangular toothing on the peripheral edge, so that the left-hand and right-hand reels 5 and 6, respectively, can be of completely identical design. Of course, it is also possible for reels having any other toothing, even asymmetrical toothing, to be combined with the novel braking and tensioning device.

In Figures 2 to 6, on the right-hand side of the central transverse axis 27 in each case, the brake is indicated by a solid line in the release position and by a dashed line in the brake position after the idle displacement A, in which position the points of the locking elements just come into contact with the flange toothing 29 when the reels 5 and 6 are in a central position.

This represents the most unfavorable situation in which none of the locking elements 31-33 directly engages any tooth flank 8 and one locking element 33 (shown as the lowest one) just misses the next tooth flank in the direction of movement (cf. arrow a).

The distance between the uppermost locking element 31 and the next tooth flank thus corresponds to the maximum additional displacement B until the lowest element engages. As shown in the end position on the left-hand side in Figure 2, the residual displacement C is converted to a lateral shift and/or rotation of the reel 5. In Figures 2 to 6, the reel 5 is shown in each case in the extreme upper position deflected through 45° from the center of the cassette.

The difference between the lengths of the three locking elements 31-33 or the mutual distance between the points of these locking elements in the (generally load-free) position after the displacement A should be chosen to be different from the tooth spacing t of the toothing 29. Advantageously, for example, the difference in length between the first and second locking points is

$$X_{1-2} = t\ (n + 1/2),$$

the difference in length between the first and third locking points is

$$X_{1-3} = t\ (n + 1/2 + 1/4)$$

$$3/4$$

and the difference in length between the first and fourth locking points is

$$X_{1-4} = t\ (n + 1/2 + 1/4 + 1/8)$$

$$7/8$$

where n is 0, 1, 2, 3 or 4. Obviously, the second term

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in the brackets continues in a geometric series.

The plurality of locking elements 31-35 provided according to the invention, and their differences in lengths, advantageously result in the brake means engaging more rapidly with the toothing, and in better tape tensioning, as shown below.

The table below shows that, in the example of the 8 mm cassette and for the same tooth spacing t, the effective, minimum tape take-up can be increased by about a factor of 4 by the novel brake means.

These experiments for comparison with the conventional brake system possessing one locking element are based on the following cassette dimensions:

Outer diameter of the reel flange	45.1 mm
Maximum tape roll diameter	43.2 mm
Hub diameter 13	16.0 mm
Diameter of reel bearing edge 14	17.9 mm
Housing opening 15	18.85 mm
Total brake displacement	2.75 mm

Brakes Type Spacing on reel	Number of brake arms	Brake path as % of the total displacement of 2.75 mm A (min)	B (max)	C (min)	Effective reel rotation, ° per reel	Effective minimum tape take-up at the front of the cassette, mm
Prior art						
Standard 1.2 mm (Fig.1)	1	44%	38.5%	17.5%	1.2°	0.6
Standard 0.7 mm (Fig.1)	1	44%	22 %	34 %	2.3°	1.2
Invention						
Type Fig.4 1.2 mm	3	22.2%	9.6%	68.2%	4.2°	2.2
Type Fig.2 1.2 mm	3	32.2%	7.4%	60.4%	4.7°	2.4
Type Fig.6 1.2 mm	2	25.8%	12 %	62 %	4.3°	2.2
Type Fig.3 1.2 mm	2	25.6%	12 %	62.4%	4.4°	2.3
Type Fig.5 1.2 mm	2	14.3%	13.4%	72.3%	5.0°	2.6

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As shown in the table, the number of locking elements essentially affects the displacement B. Displacement A is defined by the design, and is the second parameter determining the effectiveness of the tape take-up. Displacement A is dependent on the speed with which the points of the locking elements come into contact with the teeth 8 of the flanges when the brake means moves forward.

In order to keep displacement A very short, the particular spring element, which according to the invention consists of locking elements 31-35 and spring bodies 20, is advantageously provided with cam-like extensions or broadened sections 18 which interact with the fixed projections 12a and b provided on the housing. In the course of the movement of the brake means, the broadened sections come into contact with the said projections 12a and b and slide over these so that the locking elements 31-35 are bent either toward the central transverse axis 27 (release position) or away from this (braking position). If the projections and broadened sections are disposed on the other side of the particular spring element, they function accordingly.

The extensions or broadened sections 18 are preferably of a form such that an ejector can act at these points to effect removal from the mold during injection molding.

The principle underlying the structure of the spring element is described once again below, with reference to Figure 5.

The spring body 20 provided starts from the base 9 and possesses a broadened section 18, which is connected to the locking elements 34 and 35, which are likewise springy. The spring characteristics should be adjusted so that the spring constant of the spring body is always greater than that of a locking element 34 or 35, preferably by making the spring body 20 thicker ($c \geq 1.5\ d$, where d is the thickness of the locking element and c is

the thickness of the stem of the spring). The spring body 20 may impart greater mobility to the locking elements 34 and 35 together. Various spring bodies 18 [sic] are illustrated in Figures 2, 4 and 5, first a double spring stem embodiment, then a single short spring stem embodiment and finally a single long version of a spring stem being shown.

In the example shown in Figure 6, fairly long springy locking elements 21 and 22 without special spring stems 20 are formed directly on the base 9. In particular, a duck-head shape of the broadened sections 18 at the ends of the locking elements 21 and 22 has been chosen here so that additional cams, etc. can be dispensed with. The points of the duck heads enter the gaps between the teeth to effect braking. In this embodiment, housing projections 12 are also provided between the locking elements 21 and 22.

Another special feature is shown in Figure 4, where the locking elements 31-33 are connected to a broadened section 18 via an extension arm 36. In this case too, a projection 12 on the housing is provided between the base 9 and the extension arm 36. In another embodiment, it would also be possible for the extension arm 36 with the locking elements 31-33 to be rotatably mounted.

For the sake of clarity, components having the same function have been given the same reference symbols.

The shape and spring force of the locking elements 31-35 and 21 and 22 can be varied as desired, provided that the required effects are retained. The most advantageous method of production is injection molding, and the material used may be any plastic which is suitable for this technique (eg. POM, polyoxymethylene).

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Patent Claims

1. Braking and tape tensioning device for tape cassettes having a housing (1) and flanged reels (5 and 6) contained therein, in which one or more flanges carry toothing (29) at the peripheral edge and a spring element interacts with the toothing in the braking position but not in the release position, and an actuating element (25) provided on the apparatus enters the housing (1) and transfers the spring element from its braking position to its release position and positioning elements (12) provided on the cassette guide each spring element from the braking position to the release position and vice versa, wherein the spring element comprises two or more locking elements (31-35, 21, 22) of different lengths, relative to the peripheral edge of the toothed flange, the distance X between the locking points of the locking elements not corresponding to the tooth (8) . spacing t of the toothing (29) of the toothed flange.

2. Device as claimed in claim 1, wherein three or four locking elements (31-36) are provided.

3. Device as claimed in claim 1, wherein the distance X between the first and second locking points is determined by the relationship

$$X = t\ (n + 1/2)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

4. Device as claimed in claim 2, wherein the distance X_{1-3} between the first and third locking points is determined by the relationship

$$X_{1-3} = t\ (n + 3/4)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

5. Device as claimed in claim 2, wherein the distance X between the first and fourth locking points is determined

by the relationship

$$X_{1-4} = t\ (n + 7/8)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

6. Device as claimed in claims 1, 2 and 4, which comprises a brake element (9), one or more spring bodies (20) connected to this as spring element, and at least two preferably springy locking elements (31-36, 21, 22) mounted on the said spring bodies.

7. Device as claimed in claim 6, wherein the brake element (9) is provided with one or more spring bodies which are in the shape of a tuning fork and possess two locking elements (34 and 35), the lengths of the fork prongs being different.

8. Device as claimed in claims 1, 2 and 4, wherein two spring bodies (20) and, connected to these, three locking elements (31-34) of different lengths are provided.

9. Device as claimed in claims 1, 2, 4 and 6, wherein the locking elements (21, 22) are constructed with inverse droplet-shaped elements (18) on stemss as spring bodies (20).

10. Device as claimed in claims 1 to 9, wherein the spring elements possess one or more broadened sections (18) which interact with projections (12a and b) provided on the cassette housing.

11. Device as claimed in claim 10, wherein the broadened section (18) is provided between the spring body (20) and the locking elements (31-35).

12. Device as claimed in claim 10, wherein the broadened section (18) is provided directly on the locking elements (21, 22).

13. Device as claimed in claim 10, wherein the broadened section (18) is provided on an additional support arm (36).

14. Device as claimed in claims 10, 11 and 13, wherein in the operating position the projections provided on the

cassette housing are disposed laterally relative to the spring elements.

15. Device as claimed in claims 10 and 12, wherein in the operating position the projections provided on the cassette housing are disposed laterally and between the locking elements (31-36 and 21, 22).

16. A tape cassette, in particular a magnetic tape cassette, having a housing (1) and flanged reels (5, 6) contained therein and a braking and tape tensioning device, in which one or more flanges carry toothing (29) at the peripheral edge and a spring element interacts with the toothing in the braking position but not in the release position, and an actuating element (25) provided on the apparatus enters the housing (1) and transfers the spring element from its braking position to its release position and positioning elements (12) provided on the cassette guide each spring element from the braking position to the release position and vice versa, wherein the spring element comprises two or more locking elements (31-36, 21, 22) of different lengths, relative to the peripheral edge of the toothed flange, the distance X between the locking points of the locking elements not corresponding to the tooth spacing t of the toothing of the toothed flange.

17. A tape cassette as claimed in claim 16, having two coplanar flanged reels, wherein a common spring element is provided for both flanged reels and consists of a brake element (9) and two or three locking elements (31-35, 21-22) connected to this and assigned to each flanged reel (5 and 6 respectively).

18. A tape cassette as claimed in claim 17, wherein, in the case of two or three locking elements (21, 22 and 31-34) each, the distance X between them is determined by the relationship

$$X_{1-2} = t\ (n + 1/2) \text{ or } X_{1-3} = t\ (n + 3/4)$$

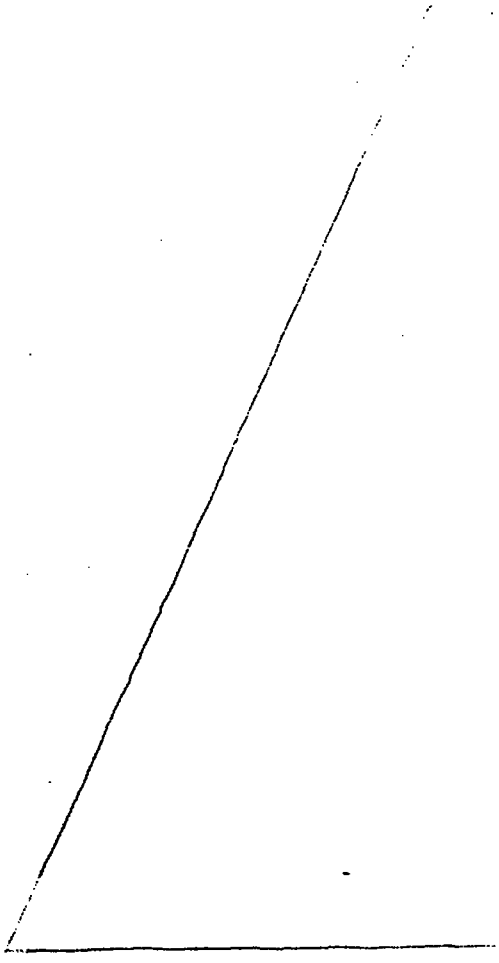
where t is the tooth spacing and n is the integer 0, 1,

2, 3, etc.

19. A tape cassette as claimed in one of claims 16 to 18, wherein the spring element possesses actuating cams (18) for interaction with the positioning projections (12) provided on the cassette.

20. A tape cassette as claimed in one or more of claims 16 to 19, incorporating a braking and tape tensioning device as claimed in one or more of any of claims 1 to 15.

As printed



Revendications

1. Dispositif de tension de bande et de freinage pour cassettes de bande, comportant un boîtier (1) et des bobines à bride (5 et 6) dans ce boîtier, une bride au moins portant sur son bord périphérique une denture (29) et un élément à ressort coopérant, en position de freinage, mais pas en position de relâchement, avec la denture, et un élément d'actionnement (25) côté appareil qui pénètre dans le boîtier (1) faisant passer l'élément à ressort de sa position de freinage à sa position de relâchement, et des éléments de positionnement (12) côté cassette provoquant l'amenée de chaque élément à ressort de sa position de freinage à sa position de relâchement et inversement, caractérisé par le fait que l'élément à ressort comprend au moins deux éléments à cliquet (31–35, 21, 22) de longueurs, rapportées au bord périphérique de la bride à denture, différentes, la distance (X) entre les pointes des cliquets des éléments à cliquet étant différente de la distance de pas des dents (8) et la denture (29) de la bride à denture.

2. Dispositif selon la revendication 1, caractérisé par le fait que sont prévus trois ou quatre éléments à cliquet (31–36).

3. Dispositif selon la revendication 1, caractérisé par le fait que la distance X entre les premiere et deuxième pointes de cliquet est déterminée par la relation

$$X_{1-2} = t\,(n + {}^1/_2)$$

t representant le pas de denture et n un nombre entier (n = 0, 1, 2, 3 etc.)

4. Dispositif selon la revendication 2, caractérisé par le fait que la distance X_{1-3} entre les premiere et troisième pointes de cliquet est déterminée par relation

$$X_{1-3} = t\,(n + {}^3/_4)$$

t représentant le pas de denture et n un nombre entier (n = 0, 1, 2, 3 etc.)

5. Dispositif selon la revendication 2, caractérisé par le fait que la distance X entre les premiere et quatrième pointes de cliquet est déterminée par relation

$$X_{1-4} = t\,(n + {}^7/_8)$$

t étant le pas de denture et n un nombre entier (n = 0, 1, 2, 3 etc.)

6. Dispositif selon les revendications 1, 2 et 4, caractérisé par un corps de freinage (9), au moins un corps élastique (20) lié au précédent comme élément à ressort et sur lequel sont ménagés au moins deux éléments à cliquet (31–36, 21, 22), de préférence élastiques.

7. Dispositif selon la revendication 6, caractérisé par le fait qu'il est prévu, comme corps de frein (9), au moins un corps de frein en forme de diapason à deux éléments à cliquet (34 et 35) de longueurs de dents de fourche différentes.

8. Dispositif selon la revendication 1, 2 et 4, caractérisé par le fait que sont prévus deux corps de frein (20) et trois éléments à cliquet (31–34) de longueurs différentes, reliés audit corps.

9. Dispositif selon les revendications 1, 2, 4 et 6, caractérisé par le fait que les éléments à cliquet (21, 22) sont réalisés, comme corps de frein (20), avec sur des tiges, des corps (18) en forme de goutte rabattus.

10. Dispositif selon la revendication 1 à 9, caractérisé par le fait que les éléments à ressort, présentent au moins un renflement (18) qui coopèrent avec des saillies du boîtier (12a et b) côté cassettes.

11. Dispositif selon la revendication 10, caractérisé par le fait que le renflement (18) est prévu entre le corps de frein(20 et les éléments à cliquet (31–35).

12. Dispositif selon la revendication 10, caractérisé par le fait que le renflement (18) est prévu directement sur les éléments à cliquet (21, 22).

13. Dispositif selon la revendication 10, caractérisé par le fait que le renflement (18) est prévu sur un bras support additionnel (36).

14. Dispositif selon les revendications 10, 11 et 13, caractérisé par le fait que les saillies du boîtier, côté cassettes, sont, en position de fonctionnement, disposées latéralement par rapport aux éléments à ressort.

15. Dispositif selon la revendication 10 et 12, caractérisé par le fait que les saillies du boîtier, côté cassettes, sont, en position de fonctionnement, disposées latéralement et entre les éléments à cliquet (31–36 et 21, 22).

16. Cassette de bande, en particulier cassette de bande magnétique, comportant un boîtier (1) et des bobines à bride (5, 6) contenues dans celui-ci et un dispositif de tension de bande et de freinage, une bride au moins portant sur son bord périphérique une denture (29) et un élément à ressort coopérant, en position de freinage, mais pas en position de relâchement, avec la denture, et un élément d'actionnement (25) côté appareil, qui pénètre dans le boîtier (1), faisant passer l'élément à ressort de sa position de freinage à sa position de relâchement et des éléments de positionnement (12) côté cassette provoquant l'amenée de chaque élément à ressort de sa position de freinage à sa position de relâchement et inversement, caractérisé par le fait que l'élément à ressort comprend au moins deux éléments à cliquet (31–35, 21, 22) de longueurs, rapportées au bord périphérique de la bride à denture, différentes, la distance (X) entre les pointes des cliquets des éléments à cliquet étant différente de la distance de pas des dents (8) de la denture (29) de la bride à denture.

17. Cassette de bande selon la revendication 16, à deux bobines à bride coplanaires, caractérisée par le fait qu'il est prévu un élément à ressort commun pour les deux bobines à bride, constitué d'un corps de frein (9) et deux ou trois éléments à cliquet (31–35, 21, 22) associés à chaque bobine à bride (5 et 6) et reliés au dit corps de frein.

18. Cassette de bande selon la revendication 17 caractérisée par le fait que, pour chacun des deux ou trois éléments à cliquet (21, 22, et 31–34) leur distance X est déterminée par la relation

$$X_{1-2} = t\,(n + 1/2) \text{ ou } X_{1-3} = t\,(n + 3/4)$$

t représentant le pas de denture et n un nombre entier (n = 0, 1, 2, 3 etc.)

19. Cassette de bande selon l'une des revendications 16 à 18 caractérisée par le fait que l'élément à ressort est muni de saillants d'actionnement (18) pour coopérer avec les saillies de positionnement (12) côté cassettes.

20. Cassette ou bande selon l'une ou plusieurs des revendications 16 à 19, caractérisée par un dispositif de tension de bande et de freinage selon l'une ou plusieurs des revendications 1 à 15.

Claims

1. Brake and tape tensioning means for tape cassettes having a housing (1) and flanged reels (5 and 6) contained therein, in which one or more flanges carry toothing (29) at the peripheral edge and a spring element interacts with the toothing in the braking position but not in the release position, and an actuating element (25) provided on the apparatus enters the housing (1) and transfers the spring element from its braking position to its release position and positioning elements (12) provided on the cassette guide each spring element from the braking position to the release position and vice versa, wherein the spring element comprises two or more locking elements (31–35, 21, 22) of different lengths, relative to the peripheral edge of the toothed flange, the distance X of the locking points of the locking elements not corresponding to the tooth (8) spacing t of the toothing (29) of the toothed flange.

2. Means as claimed in claim 1, wherein three or four locking elements (31–36) are provided.

3. Means as claimed in claim 1, wherein the distance X between the first and second locking points is determined by the relationship

$$X = t\,(n + 1/2)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

4. Means as claimed in claim 2, wherein the distance X_{1-3} between the first and third locking points is determined by the relationship

$$X_{1-3} = t\,(n + 3/4)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

5. Means as claimed in claim 2, wherein the distance X between the first and fourth locking points is determined by the relationship

$$X_{1-4} = t\,(n + 7/8)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

6. Means as claimed in claims 1, 2 and 4, which comprises a brake element (9), one or more spring bodies (20) connected to this as spring element, and at least two preferably springy locking elements (31–36, 21, 22) mounted on the said spring bodies.

7. Means as claimed in claim 6, wherein the brake element (9) is provided with one or more spring bodies which are in the shape of a tuning fork and possess two locking elements (34 and 35), the lengths of the fork prongs being different.

8. Means as claimed in claims 1, 2 and 4, wherein two spring bodies (20) and, connected to these, three locking elements (31–34), of different lengths are provided.

9. Means as claimed in claims 1, 2, 4 and 6, wherein the locking elements (21, 22) are con-

structed with inverse droplet-shaped elements (16) on stalks as spring bodies (20).

10. Means as claimed in claims 1 to 9, wherein the spring elements possess one or more broadened sections (18) which interact with projections (12a and b) provided on the cassette housing.

11. Means as claimed in claim 10, wherein the broadened section (18) is provided between the spring body (20) and the locking elements (31–35).

12. Means as claimed in claim 10, wherein the broadened section (18) is provided directly on the locking elements (21, 22).

13. Means as claimed in claim 10, wherein the broadened section (18) is provided on an additional support arm (36).

14. Means as claimed in claims 10, 11 and 13, wherein in the operating position the projections provided on the cassette housing are disposed laterally relative to the spring elements.

15. Means as claimed in claims 10 and 12, wherein in the operating position the projections provided on the cassette housing are disposed laterally and between the locking elements (31–36 and 21, 22).

16. A tape cassette, in particular a magnetic tape cassette, having a housing (1) and flanged reels (5, 6) contained therein and a brake and tape tensioning means, in which one or more flanges carry toothing (29) at the peripheral edge and a spring element interacts with the toothing in the braking position but not in the release position, and an actuating element (25) provided on the apparatus enters the housing (1) and transfers the spring element from its braking position to its release position and positioning elements (12) provided on the cassette guide each spring element from the braking position to the release position and vice versa, wherein the spring element comprises two or more locking elements (31–36, 21, 22) of different lengths, relative to the peripheral edge of the toothed flange, the distance X of the locking points of the locking elements not corresponding to the tooth spacing t of the toothing of the toothed flange.

17. A tape cassette as claimed in claim 16, having two coplanar flanged reels, wherein a common spring element is provided for both flanged reels and consists of a brake element (9) and two or three locking elements (31–35, 21, 22) connected to this and assigned to each flanged reel (5 and 6 respectively).

18. A tape cassette as claimed in claim 17, wherein, in the case of two or three locking elements (21, 22 and 31–34) each, the distance X between them is determined by the relationship

$$X_{1-2} = t\,(n + 1/2) \text{ or } X_{1-3} = t\,(n + 3/4)$$

where t is the tooth spacing and n is the integer 0, 1, 2, 3, etc.

19. A tape cassette as claimed in one of claims 16 to 18, wherein the spring element possesses actuating cams (18) for interaction with the said positioning projections (12).

20. A tape cassette as claimed in one or more of claims 16 to 19, incorporating a brake and tape tensioning means as claimed in one or more of any of claims 1 to 15.