

Adjustable torsion-spring clutch

The invention relates to an adjustable torsion-spring clutch, in particular for an apparatus for recording and/or playing back signals on a magnetic tape, the clutch comprising first and second coaxially arranged clutch sections which are rotatable relative to each other about an axis of rotation, and a coaxially arranged cylindrical helical torsion spring which at one end is connected to the first clutch section, whilst the second clutch section comprises a sleeve which is substantially circular in a cross-section perpendicular to the axis of rotation and around which turns of the spring are wrapped, which turns are adjustable in diameter for determining the torque to be transmitted between the clutch sections.

A clutch of this type is known from the AT-B-351 794. In this known clutch the sleeve of the second clutch section is conical, the spring being axially movable relative to the sleeve so as to enable the diameter of the spring turns to be adjusted. Depending on the apex angle of this cone some friction may occur between the turns of the spring under certain circumstances, which may give rise to a certain inaccuracy in the operation. It is the object of the invention to construct such a clutch so that a most accurate operation is ensured under all circumstances. According to the invention the sleeve of the second clutch section has a substantially circular cylindrical shape and the diameter of the sleeve is adjustable. Owing to the circular cylindrical shape of the sleeve all spring turns can continuously cooperate with the sleeve, each turn as far as possible contributing equally to the transmission of the torque. This optimum cooperation between each turn and the sleeve enables a constant accurately adjustable torque to be transmitted between the clutch sections over a long period. Thus, once it has been adjusted, the clutch in accordance with the invention will perform in a very reliable manner for a long period of time, without any further readjustment.

In a clutch in accordance with the invention it is advantageous if the sleeve, for adjusting its diameter, is rotationally adjustable to any of a plurality of positions relative to an other part of the second clutch section. This provides a satisfactory adjustability in combination with a compact construction of the clutch. In a suitable embodiment of the clutch the sleeve is made of a material which for adjusting the sleeve diameter is elastically movable in a radial direction relative to the axis of rotation. In this way the sleeve diameter can be adjusted in a reliable and simple manner. It has been found that such an adjustment can be carried out in a suitable manner if the sleeve comprises a plurality of segments of similar shape, which are arcuate in a cross-section perpendicular to the

axis of rotation and which are each movable in a radial direction relative to the axis of rotation. The segments enable the circular cylindrical shape of the sleeve to be maintained upon adjustment, so that an optimum cooperation between the turns and sleeve is obtained at various sleeve diameters.

In view of this it is very effective for the clutch if the segments extend in an axial direction and at one end are connected to an annular support, which is provided with adjusting means for the rotational adjustment of the sleeve relative to the other part of the second clutch section. In addition to a robust construction this provides a favourable adjusting facility for the segments.

In view of the foregoing a very advantageous embodiment of the clutch is obtained if the sleeve is concentrically arranged around a substantially cylindrical hub of the second clutch section, which hub at its periphery has a plurality of convexly curved ramp surfaces of similar shape which cooperate with the sleeve, each ramp surface, in a cross-section perpendicular to the axis of rotation extending along an arc, the distance of which from the axis of rotation gradually increases in a circumferential direction. The ramp surfaces enable the diameter of the sleeve to be adjusted to a multitude of gradually increasing values. For the clutch in accordance with the invention it is advantageous if the number of segments of the sleeve is equal to the number of ramp surfaces of the hub, and the inner surface of each segment, in a cross-section perpendicular to the axis of rotation, has a concave arcuate shape which corresponds to the convex arcuate shape of the ramp surfaces. During the adjustment an optimum cooperation of the segments with the ramp surfaces is thus maintained, which is important in order to maintain the cylindrical shape of the sleeve. In view of this adjustment it is found to be advantageous if each segment comprises an inwardly radially extending shoulder at the end of its arcuate inner surface which is furthest from the axis of rotation, the distance of said shoulder from the axis of rotation substantially corresponding to the distance from this axis of that end of the surface of the segment which is nearer the axis of rotation. During adjustment the shoulder assist in maintaining the cylindrical shape of the segments. In connection with this it is found to be favourable if the ramp surfaces and the segments each extend over an arc of substantially 120° . Owing to this step the segments are divided over the clutch circumference in an optimum manner, so as to obtain a wider range of sleeve diameter adjustment, while maintaining the cylindrical shape.

The invention is described in more detail on

the basis of an embodiment shown in the drawing, but to which the invention is not limited.

Fig. 1 is a plan view of an apparatus in which the invention is used.

Fig. 2, partly in elevation and partly in an axial section taken on the line II—II in Fig. 1, shows a wrapped spring clutch in accordance with the invention on an enlarged scale.

Fig. 3, partly in elevation and partly in a cross-section taken on the line III—III in Fig. 2, shows parts of the wrapped spring clutch.

Fig. 4 partly in elevation and partly in a cross-section taken on the line IV—IV in Fig. 2, shows parts of the wrapped spring clutch.

The apparatus 1 shown in Fig. 1 is an apparatus by means of which signals can be recorded and/or played back on a magnetic tape 2, which is wound on two winding hubs in a substantially rectangular cassette 3 and which between the winding hubs passes along a long side of the cassette.

The apparatus comprises a chassis with a deck plate 4 at the top, an upper surface of said deck plate constituting a positioning surface for the cassette 3. When the cassette is placed on the positioning surface the winding hubs are coupled to the winding mandrils 5 and 6.

The apparatus furthermore comprises a head plate 7, near the long side of the cassette, which plate carries magnetic heads, which comprise an erase head 8 and a combined recording/playback head 9. Near the said long side the cassette comprises a side wall, formed with a plurality of openings which, by moving the head plate 7 in the direction of the cassette, enable the magnetic heads 8 and 9 to be brought into operative contact with the magnetic tape, and which enable the magnetic tape to be pressed by a pressure roller 10 against a capstan 11, which extends perpendicularly to the head plate 7 and which is engageable with the drive of the apparatus.

The winding mandril 6 concentrically surrounds and engages with the end portion of a hollow spindle 12 (see Fig. 2), which is rotatable, about an axis of rotation 13 on a journal 13A which is rigidly mounted on the deck plate 4. At its end which is remote from the mandril 6 the spindle 12 is rigidly connected as a unit to a gear wheel 14, which during fast winding of the magnetic tape is directly coupled to the drive of the apparatus.

The spindle 12 together with the gear wheel 14 constitutes a first clutch section 15 which during recording or playback acts as the driven clutch section. In the embodiment shown the spindle 12 with the gear wheel 14 is made of a polyacetal plastics having the trade name "Delrin".

The spindle 12 furthermore serves for journalling a cylindrical hub 16 of a second clutch section 17 which acts as driving clutch section during recording or playback. The hub

16 extends axially inside the gear wheel 14 and inside the gear wheel 14 it is surrounded by a ring 18 which is concentric with the hub and which is integral with the gear wheel 14. At its end which is remote from the gear wheel 14 the hub 16 is rigidly connected to a connecting element 19 comprising a flat annular portion 20 which extends perpendicular to the axis of rotation 13. The element 19 further comprises a rim portion 20A, which is concentric with the axis 13 and adjoins the portion 20 (also see Fig. 4). The rim portion 20A is connected to an annular portion 21 of a gear wheel 22, which portion 21 is perpendicular to the axis of rotation 13. Said gear wheel 22 is rigidly connected to the hub 16 by the element 19 and viewed in Fig. 2, is situated at only a slight axial distance from the gear wheel 14. In the present embodiment the hub 16, the element 19 and the gear wheel 22 form a unit which is made of a polyamide plastics, known as "nylon". Engaged around the hub 16 is a substantially circular cylindrical sleeve 23, which comprises a plurality of separate segments 24 which have a similar arcuate shape in a cross-section perpendicular to the axis of rotation 13 and which, as is shown in Fig. 3, preferably each extend over an arc of substantially 120°. The segments 24 are made of an elastic material. In the present embodiment the polyacetal plastics with the trade name "Delrin" is used for the segments, which plastics has satisfactory anti-friction properties and moreover is comparatively hard. The segments each extend in an axial direction into the space enclosed by the ring 18 and each are connected, as is shown in Fig. 3, at only two mutually spaced locations 24B adjacent plate 19 to an intermediate ring sector 25A; the segments 24 are free at their remote axial other ends. In order to obtain an optimum movability for each segment in the radial direction each intermediate ring sector 25A, viewed in the circumferential direction, is connected only halfway between the locations 24B at a location 25B to an annular support 25. One side of the support 25 is positioned against the flat annular portion 20. The support 25 is provided with adjusting means, constituted by two diametrically disposed adjusting members 26, which each extend in the radial direction beyond the circumference of the flat portion 20. For this purpose an arcuate recess 27 is formed in the portion 20 and the rim portion 20A for each member 26, which recess extends over an arc of approximately 120° in the present embodiment (see Fig. 4). In order to enable the respective members 26 to be fitted from the side nearer the gear wheel 14, openings 28 are formed in the portion 21, one such opening being formed adjacent one end of each recess 27, which openings, for the passage of the members 26, are shaped to suit the dimensions and shape of the members 26. At least one of the members 26 is provided with teeth 29 on

the side which faces the flat portion 20, which teeth cooperate with teeth 30 on the arcuate wall of the recess 27.

The members 26 serve to enable the sleeve 23 by rotation around the hub 16, to be adjusted to and retained in any of a plurality of positions relative to the hub 16 (and thus relative to the other part of the clutch section 17). The adjustment is possible due to a loosely contact between the teeth 29 and 30 (Fig. 4).

On its outer periphery the hub 16 comprises three similar convexly curved arcuate ramp surfaces 31 which each extend preferably over substantially 120°. Each surface 31 is formed so that, in a cross-section perpendicular to the axis of rotation 13 and reckoned in the direction of rotation A, the distance of the ramp surface from the axis of rotation 13 gradually increases (Fig. 4). The ramp surfaces act as cam surfaces to the diameter of the sleeve 23 upon the rotational adjustment of the sleeve around the hub 16. In order to obtain an accurate cooperation, the inner surfaces of the segments 24, on the inner circumference in a cross-section perpendicular to the axis of rotation 13, each have a concave arcuate shape which corresponds substantially to the ramp surfaces 31. Each segment, at that end of its arcuate inner surface which is further from the axis of rotation (i.e. the forward end relative to the direction of rotation represented by the arrow A) preferably comprises an inwardly radially extending shoulder 24A, whose distance from the axis of rotation 13 substantially corresponds to the distance from this axis of that end of the inner surface of the segment which is nearer the axis of rotation (the rearward end relative to the arrow A). The difference in radial distance between the two ends of the inner surface of each segment and the axis of rotation is approximately 0.4 mm in the present embodiment. However, depending on the required adjustment range this difference may have another value.

During rotation the segments 24 slide over the ramp surfaces 31. When the adjusting members 26 are situated adjacent the openings 28 in the initial position, each segment coincides fully with an associated one of the ramp surfaces, whilst the shoulder 24a of the segment is positioned against the beginning of the next ramp surface. As the members 26 are moved further in the direction of the arrow A an increasingly thicker part of each segment 24 slides over the part of the associated ramp surface which is furthest from the axis of rotation 13, as a result of which the segment is moved outwards in a radial direction and the sleeve diameter increases. As during the movement of the adjusting members 26 each shoulder 24A is also moved outwards in the radial direction by the next ramp surface, the cylindrical shape of the segments and therefore the cylindrical shape of the sleeve 23 is maintained during the adjustment. As stated,

the segments are made of an elastic material and are moreover supported elastically with the aid of the intermediate ring sectors 25A, so that when the members 26 are moved back in the opposite direction to the arrow A the segments move back and the sleeve diameter is reduced.

Wrapped around the sleeve 23 is a cylindrical helical torsion spring 32, a number of turns of which are accommodated in the space bounded by the sleeve 23 and the ring 18. An end portion 33 of the spring extends through an opening in the ring 18 and has a hooked extremity which is retained between the ring 18 and the gear wheel 14. Thus, the spring is connected to the first clutch section 15 with the end portion 33, at least in a tangential direction. The spring is wound in an anti-clockwise direction, i.e. in the direction indicated by the arrow A in Fig. 4. The end of the spring 32 which is remote from the end portion 33 is disposed freely. Thus, the spring is in contact with the second clutch section 17 via the spring turns only, all spring turns performing a similar function. In the present embodiment the spring is made of CrNi spring steel.

Together with the clutch sections 15 and 17 the spring 32 constitutes a wrapped spring clutch. This clutch has the property that if the spring-wrapped clutch section 17 is driven in the direction of the arrow A via the gear wheel 22, which is generally the case during recording or playback, the spring 32, with respect to the winding direction, is slightly unwound by a torque which is transmitted by the friction between the spring turns and the sleeve 23 and whose magnitude depends on the instantaneous stress in the spring turns. The spring 32 in turn moves the driven clutching section 15, so that the winding mandril 6 is rotated and the magnetic tape is wound from the capstan 11.

If during winding the maximum transmissible torque is exceeded, slip will occur between the spring turns and the sleeve 23. Said maximum transmissible torque depends on the stress in the turns of the spring 32 which surround the sleeve, which stress depends on the diameter of the sleeve 23.

As stated previously, the diameter of the sleeve 23 can be changed by adjusting the members 26, a larger sleeve diameter resulting in a higher stress in the turns of the spring 32 and a higher maximum transmissible torque. In order to obtain a suitable lubrication of the sleeve 23, it may be advantageous, in addition to the use of a sleeve material which is suited to the function of the sleeve, to use silicone oil.

The wrapped spring clutch described in the foregoing enables the transmission torque to be adjusted simply, which adjustment can moreover be performed in a particularly accurate manner. The construction of the adjusting members 26 and the cooperating teeth 29 and 30 ensures that a specific adjustment of the clutch is always maintained.

In the case of a wrapped spring clutch which

is employed in an apparatus of the type described such an adjustment may be necessary, because the components of the clutch, in particular the spring, exhibit tolerances which should be eliminated in order to obtain the most accurate tape transport.

Owing to its small axial dimension the present clutch may be used in an apparatus of the type described without any problems.

It is to be noted that the present clutch, in view of its unidirectional action through the use of the spring 32, also has the advantage that in the opposite direction, i.e. in the case of differences in relative speed between the gear wheels 14 and 22 in the direction opposite to the arrow A in Figure 4, a free-wheeling possibility is obtained. As a result of this several variants are possible for coupling the drive of the apparatus to the respective winding mandrils 5 and 6 and the capstan 11.

Furthermore, it is to be noted that, depending on the requirements imposed on the clutch, it is alternatively possible, instead of a sleeve 23 comprising separate segments 24, to employ a sleeve having a continuous cylindrical wall and made of a highly elastic material. Instead of three arcuate segments which extend over 120° each, it is alternatively possible to employ two or four or more segments which together again cover 360°. The use of three segments represents an optimum situation in respect of the desired wide range of adjustment of the clutch and the retention of the circular cylindrical shape of the sleeve 23.

Owing to the said properties the wrapped spring clutch is also suitable for use in other equipment where it is necessary to correct certain tolerances and where a transmission with an accurately adjustable torque, in combination with a unidirectional action, is required.

Claims

1. An adjustable torsion-spring clutch, in particular for an apparatus for recording and/or playing back signals on a magnetic tape, the clutch comprising first and second coaxial clutch sections (15, 17) which are rotatable relative to each other about an axis of rotation (13), and a coaxially arranged cylindrical helical torsion spring (32) which is connected at one end (33) to the first clutch section (15), the second clutch section (17) comprising a sleeve (23) which is substantially circular in a cross-section perpendicular to the axis of rotation and around which turns of the spring are wrapped, which turns are adjustable in diameter for determining the torque to be transmitted between the clutch sections, characterized in that the sleeve (23) of the second clutch section has a substantially circular cylindrical shape and is adjustable in diameter.

2. A clutch as claimed in Claim 1, characterized in that the sleeve (23), for adjusting its diameter is rationally adjustable to any of a

plurality of positions relative to an other part of the second clutch section (17).

3. A clutch as claimed in Claim 1 or 2, characterized in that the sleeve (23) is made of a material which for adjusting the sleeve diameter is elastically movable in a radial direction relative to the axis of rotation (13).

4. A clutch as claimed in Claim 3, characterized in that the sleeve (23) comprises a plurality of similar segments (24) which are arcuate in a cross-section perpendicular to the axis of rotation and which are each movable in a radial direction relative to the axis of rotation (13).

5. A clutch as claimed in Claims 2 and 4, characterized in that the segments (24) extend in an axial direction and at one end are connected to an annular support (25), which is provided with adjusting means (26) for the rotational adjustment of the sleeve (23) relative to the other part of the second clutch section (17).

6. A clutch as claimed in any of Claims 3—5, characterized in that the sleeve (23) is concentrically arranged around a substantially cylindrical hub (16) of the second clutch section (17), which hub at its periphery comprises a plurality of similar convexly curved ramp surfaces (31) which cooperate with the sleeve, each ramp surface, in a cross-section perpendicular to the axis of rotation (13) extending along an arc, the distance of which from the axis of rotation gradually increases in a circumferential direction.

7. A clutch as claimed in Claim 6, characterized in that the number of segments (24) of the sleeve (23) is equal to the number of ramp surfaces (31) of the hub (16) and the inner surface of each segment, in a cross-section perpendicular to the axis of rotation (13) has a concave arcuate shape corresponding to the convex arcuate shape of the ramp surface.

8. A clutch as claimed in Claim 7, characterized in that each segment (24), at that end of its arcuate inner surface which is further from the axis of rotation, comprises an inwardly radially extending shoulder (24A), whose distance from the axis of rotation substantially corresponds to the distance from this axis of that end of the inner surface of the segment which is nearer the axis of rotation.

9. A clutch as claimed in Claim 7 or 8, characterized in that the ramp surface (31) and the segments (24) each extend over an arc of substantially 120°.

Revendications

1. Accouplement à ressort de torsion réglable, destiné en particulier à un dispositif servant à enregistrer et/ou à lire des signaux sur une bande magnétique, pourvu de deux corps d'accouplement (15, 17) coaxiaux pouvant tourner réciproquement autour d'un axe de rotation (13) et d'un ressort de torsion (32) cylindrique.

is employed in an apparatus of the type described such an adjustment may be necessary, because the components of the clutch, in particular the spring, exhibit tolerances which should be eliminated in order to obtain the most accurate tape transport.

Owing to its small axial dimension the present clutch may be used in an apparatus of the type described without any problems.

It is to be noted that the present clutch, in view of its unidirectional action through the use of the spring 32, also has the advantage that in the opposite direction, i.e. in the case of differences in relative speed between the gear wheels 14 and 22 in the direction opposite to the arrow A in Figure 4, a free-wheeling possibility is obtained. As a result of this several variants are possible for coupling the drive of the apparatus to the respective winding mandrils 5 and 6 and the capstan 11.

Furthermore, it is to be noted that, depending on the requirements imposed on the clutch, it is alternatively possible, instead of a sleeve 23 comprising separate segments 24, to employ a sleeve having a continuous cylindrical wall and made of a highly elastic material. Instead of three arcuate segments which extend over 120° each, it is alternatively possible to employ two or four or more segments which together again cover 360°. The use of three segments represents an optimum situation in respect of the desired wide range of adjustment of the clutch and the retention of the circular cylindrical shape of the sleeve 23.

Owing to the said properties the wrapped spring clutch is also suitable for use in other equipment where it is necessary to correct certain tolerances and where a transmission with an accurately adjustable torque, in combination with a unidirectional action, is required.

Claims

1. An adjustable torsion-spring clutch, in particular for an apparatus for recording and/or playing back signals on a magnetic tape, the clutch comprising first and second coaxial clutch sections (15, 17) which are rotatable relative to each other about an axis of rotation (13), and a coaxially arranged cylindrical helical torsion spring (32) which is connected at one end (33) to the first clutch section (15), the second clutch section (17) comprising a sleeve (23) which is substantially circular in a cross-section perpendicular to the axis of rotation and around which turns of the spring are wrapped, which turns are adjustable in diameter for determining the torque to be transmitted between the clutch sections, characterized in that the sleeve (23) of the second clutch section has a substantially circular cylindrical shape and is adjustable in diameter.

2. A clutch as claimed in Claim 1, characterized in that the sleeve (23), for adjusting its diameter is rationally adjustable to any of a

plurality of positions relative to an other part of the second clutch section (17).

3. A clutch as claimed in Claim 1 or 2, characterized in that the sleeve (23) is made of a material which for adjusting the sleeve diameter is elastically movable in a radial direction relative to the axis of rotation (13).

4. A clutch as claimed in Claim 3, characterized in that the sleeve (23) comprises a plurality of similar segments (24) which are arcuate in a cross-section perpendicular to the axis of rotation and which are each movable in a radial direction relative to the axis of rotation (13).

5. A clutch as claimed in Claims 2 and 4, characterized in that the segments (24) extend in an axial direction and at one end are connected to an annular support (25), which is provided with adjusting means (26) for the rotational adjustment of the sleeve (23) relative to the other part of the second clutch section (17).

6. A clutch as claimed in any of Claims 3—5, characterized in that the sleeve (23) is concentrically arranged around a substantially cylindrical hub (16) of the second clutch section (17), which hub at its periphery comprises a plurality of similar convexly curved ramp surfaces (31) which cooperate with the sleeve, each ramp surface, in a cross-section perpendicular to the axis of rotation (13) extending along an arc, the distance of which from the axis of rotation gradually increases in a circumferential direction.

7. A clutch as claimed in Claim 6, characterized in that the number of segments (24) of the sleeve (23) is equal to the number of ramp surfaces (31) of the hub (16) and the inner surface of each segment, in a cross-section perpendicular to the axis of rotation (13) has a concave arcuate shape corresponding to the convex arcuate shape of the ramp surface.

8. A clutch as claimed in Claim 7, characterized in that each segment (24), at that end of its arcuate inner surface which is further from the axis of rotation, comprises an inwardly radially extending shoulder (24A), whose distance from the axis of rotation substantially corresponds to the distance from this axis of that end of the inner surface of the segment which is nearer the axis of rotation.

9. A clutch as claimed in Claim 7 or 8, characterized in that the ramp surface (31) and the segments (24) each extend over an arc of substantially 120°.

Revendications

1. Accouplement à ressort de torsion réglable, destiné en particulier à un dispositif servant à enregistrer et/ou à lire des signaux sur une bande magnétique, pourvu de deux corps d'accouplement (15, 17) coaxiaux pouvant tourner réciproquement autour d'un axe de rotation (13) et d'un ressort de torsion (32) cylindri-



que coaxial dont une extrémité (33) est reliée à un premier corps d'accouplement (15), tandis qu'un second corps d'accouplement (17) comporte une tubulure (23) qui, en coupe perpendiculaire à l'axe de rotation, est à peu près circulaire et sur laquelle des spires du ressort de torsion sont placées, ces spires étant d'un diamètre réglable pour déterminer le moment de torsion à transmettre entre les corps d'accouplement, caractérisé en ce que la tubulure (23) a une forme à peu près cylindrique et un diamètre réglable.

2. Accouplement suivant la revendication 1, caractérisé en ce que la tubulure (23), pour le réglage de son diamètre peut être réglée par rotation dans une quelconque de plusieurs positions par rapport à une autre partie du second corps d'accouplement (17).

3. Accouplement suivant la revendication 1 ou 2, caractérisé en ce que la tubulure (23) est faite d'une matière qui, pour la réglage de son diamètre, peut être déplacée élastiquement dans un sens radial par rapport à l'axe de rotation (13).

4. Accouplement suivant la revendication 3, caractérisé en ce que la tubulure (23) est formée d'un certain nombre de segments (24) semblables qui sont courbes en coupe perpendiculaire à l'axe de rotation et qui sont mobiles chacun dans le sens radial par rapport à l'axe de rotation (13).

5. Accouplement suivant les revendications 2 et 4, caractérisé en ce que les segments (24) s'étendent dans le sens axial et sont reliés d'un côté à un support annulaire (25) qui est pourvu de moyens de réglage (26) pour régler la tubulure (23) par rotation par rapport à l'autre partie du second corps d'accouplement (17).

6. Accouplement suivant l'une quelconque des revendications 3 à 5, caractérisé en ce que la tubulure (23) est disposée concentriquement autour d'un moyeu (16) à peu près cylindrique du second corps d'accouplement (17), qui, sur sa périphérie extérieure, comporte un certain nombre de surfaces de rampe (31) de formes semblables, qui coopèrent avec la tubulure, étant entendu que chaque surface de rampe décrit, selon une coupe perpendiculaire à l'axe de rotation (13), un arc qui, vu dans le sens circonférentiel, s'éloigne progressivement de l'axe de rotation.

7. Accouplement suivant la revendication 6, caractérisé en ce que le nombre de segments (24) de la tubulure (23) est égal au nombre de surfaces de rampe (31) du moyeu (16) et la surface interne de chaque segment, selon une coupe perpendiculaire à l'axe de rotation, a une forme courbe concave correspondant à la forme courbe convexe des surfaces de rampe.

8. Accouplement suivant la revendication 7, caractérisé en ce que chaque segment (24), à l'extrémité de sa surface interne courbe qui est la plus éloignée de l'axe de rotation, comprend un talon (24a) s'étendant radialement vers

l'intérieur, la distance séparant le talon de l'axe de rotation correspondant en substance à la distance séparant cet axe de l'extrémité de la surface interne du segment qui est plus proche de l'axe de rotation.

9. Accouplement suivant la revendication 7 ou 8, caractérisé en ce que les surfaces de rampe (31) et les segments (24) s'étendent chacun, de préférence, sur un arc d'environ 120°.

Patentansprüche

1. Einstellbare Schlingfederkupplung, insbesondere für eine Vorrichtung zum Aufnehmen und/oder Wiedergeben von Signalen auf bzw. von einem Magnetband, mit ersten und zweiten koaxial angeordneten, um eine Drehachse (13) gegeneinander drehbaren Kupplungskörpern (15, 17) und einer koaxial angeordneten zylinderförmigen Schlingfeder (32), die mit einem Ende (33) mit dem ersten Kupplungskörper (15) fest verbunden ist, wogegen der zweite Kupplungskörper (17) einem im Schnitt senkrecht zur Drehachse nahezu kreisförmig ausgebildeten Mantel (23) aufweist, um den Windungen der Schlingfeder liegen, welche zur Bestimmung des zwischen den Kupplungskörpern zu übertragenden Torsionsmomentes im Durchmesser einstellbar sind, dadurch gekennzeichnet, dass der Mantel (23) des zweiten Kupplungskörpers nahezu kreiszylinderförmig und im Durchmesser einstellbar ist.

2. Kupplung nach Anspruch 1, dadurch gekennzeichnet, dass der Mantel (23) zum Einstellen des Durchmessers gegenüber dem übrigen Teil des zweiten Kupplungskörpers (17) drehbar und in eine Anzahl von Stellungen gegenüber dem übrigen Teil einstellbar ist.

3. Kupplung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass der Mantel (23) aus einem Werkstoff besteht, der zum Einstellen des Manteldurchmessers gegenüber der Drehachse (13) in radialer Richtung elastisch beweglich ist.

4. Kupplung nach Anspruch 3, dadurch gekennzeichnet, dass im Schnitt senkrecht zur Drehachse der Mantel (23) mehrere bogenförmige, untereinander entsprechend ausgebildete Segmente (24) aufweist, die je gegenüber der Drehachse (13) in radialer Richtung beweglich sind.

5. Kupplung nach Anspruch 2 und 4, dadurch gekennzeichnet, dass sich die Segmente (24) in axialer Richtung erstrecken und auf einer Seite mit einem ringförmigen Träger (25) verbunden sind, der mit Einstellmitteln (26) zum Einstellen des Mantels (23) gegenüber dem übrigen Teil des zweiten Kupplungskörpers (17) versehen ist.

6. Kupplung nach einem der Ansprüche 3 bis 5, dadurch gekennzeichnet, dass der Mantel (23) konzentrisch um eine nahezu zylinderförmige



Nabe (16) des zweiten Kupplungskörpers (17) angeordnet ist und dieser Kupplungskörper am Aussenumfang mehrere mit dem Mantel zusammenarbeitende, untereinander entsprechend ausgebildete Auflaufflächen (31) aufweist, wobei jede Auflauffläche im Schnitt senkrecht zur Drehachse (13) einen Bogen beschreibt, dessen Abstand von der Drehachse in Umfangsrichtung gesehen allmählich zunimmt.

7. Kupplung nach Anspruch 6, dadurch gekennzeichnet, dass die Anzahl der Segmente (24) des Mantels (23) der Anzahl der Auflaufflächen (31) der Nabe (16) entspricht und die Segmente je im Schnitt senkrecht zur Drehachse (13) am Innenumfang einen den Auf-

lauflächen entsprechenden bogenförmigen Verlauf aufweisen.

8. Kupplung nach Anspruch 7, dadurch gekennzeichnet, dass jedes Segment (24) im Schnitt senkrecht zur Drehachse (13) am Innenumfang in der Nähe des in einem grössten Abstand von der Drehachse liegenden Teiles einen Nocken (24A) umfasst, dessen Abstand von der Drehachse dem in einem kleinsten Abstand von der Drehachse liegenden Teil des Segments nahezu entspricht.

9. Kupplung nach Anspruch 7 oder 8, dadurch gekennzeichnet, dass sich die Auflaufflächen (31) und die Segmente (24) je vorzugsweise über einen Bogen von nahezu 120° erstrecken.

