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(54) **Storage reel assembly and a pair of matable hub members therefor.**

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(73) Proprietor: **AMP INCORPORATED, Eisenhower Boulevard, Harrisburg, Pennsylvania (US)**

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(72) Inventor: **Carter, Clyde Thomas, R.D. No.1, Shermans Dale, Pennsylvania (US)**

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(74) Representative: **Terrell, Thomas Gwyn, 20 Queensmere, Slough, Berkshire SL1 1YZ (GB)**

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Storage reel assembly and a pair of matable hub members therefor

This invention relates in general to the art of packaging elongate flexible material and relates in particular to a rotary storage reel assembly for such material, and to a pair of matable hub members for such an assembly.

A problem with which the invention is concerned is the provision of a storage reel assembly which can simply and rapidly be assembled into a finished storage reel, and hub members of which can be used with a variety of different sized reel end flange members to produce, as required, storage reels of various diameters and widths. Although «knock down» or collapsible storage reels are known, for example from United States Patent Specifications Nos. 1013588; 1265110; 1679573; 1815499; 1949378; 2312899; 2695142; 2881985; 3301500; and 3822851; Australian Patent Specification No. 145690; West German Utility Model Specification No. 7008696; and French Patent Specification No. 1535724, none of these known assemblies fulfills all the above criteria. The use of screw means to maintain the parts in assembled relationship, for example, renders the assembly time undesirably long and the provision of fastening means on the reel end flange members themselves, for example, renders them usable only with complementarily formed parts.

There is described in Australian Patent Specification No. 145690 a rotary storage reel assembly comprising first and second reel end flange members each having a central through opening; a tubular hub for reception in the openings; locking means for releasably securing the reel end flange members and the hub in assembled relationship, with the hub received in the openings and the reel end flange members in substantially parallel spaced relationship at opposite ends of the hub; and a spacer member having a central through aperture; the hub comprising two matable hub members each of which can be passed through a respective one of the central openings to an extent limited by stop means on the respective hub members, to mate in the central aperture of the spacer member when such is interposed between the reel end flange members, means being provided for restraining relative rotation between the hub members and the spacer member in the assembled condition of the reel. Such a known storage reel assembly will hereinafter be referred to as a "storage reel assembly as herein defined".

Since the hub members of this known assembly are screwed together in order to assemble the finished reel, this assembly has the disadvantage mentioned above in relation to the use of screw means.

According to one aspect of the invention, a storage reel assembly as herein defined is characterised in that the locking means comprise at least one locking flange on one hub member and at least one row of locking ribs on the other hub member, the row extending axially thereof, the or

each locking flange being interposeable between a selected adjacent pair of the locking ribs by relatively rotating the hub members when in their mating relationship, to an extent limited by an abutment carried by one of the hub members, one hub member having a keying portion which is insertable into the central aperture of the spacer member, which aperture is of non-circular cross-section, to key such hub member to the spacer member.

Not only can the parts of the assembly be easily and rapidly assembled, but the reel end flange members can be in the form of simple annular discs, different sized pairs of such flange members being capable of being connected by means of the same hub members, and the width of the finished reel being determinable by choosing a spacer member of appropriate length. The fact that for producing a range of different sized reels, only hub members of one size need be stocked reduces production costs and simplifies storage and stock keeping records. No locking means need be provided on the spacer member or the reel end flange members.

According to another aspect of the invention, a pair of matable hub members for an assembly according to the invention in which each hub member comprises a base portion having a flange for abutment against the respective reel end flange member, and a mating portion in the form of a circular, or substantially circular, cross-section tube extending substantially centrally from the base portion, the mating portion of one hub member being adapted to receive the mating portion of the other hub member, is characterised in that the other hub member carries locking ribs in the form of a series of spaced, interrupted rings extending circumferentially about the outer surface of its mating portion, and the one hub member carries a plurality of locking flanges extending axially inwardly from the inner surface of its mating portion at its end remote from its base portion, an abutment in the form of a rib extending from one of the locking flanges towards the base portion of the one hub member for limiting relative rotation of the hub members when in their mating relationship, one of the hub members having a keying portion extending from its base portion alongside the mating portion, for co-operation with the walls of the central aperture of the spacer member to key the hub member to the spacer member.

According to a further aspect of the invention, a rotary storage reel assembly comprising first and second reel end flange members each having a central through opening; a hub for reception in the openings; locking means for releasably securing the flange members and the hub in assembled relationship, with the hub received in the openings and the flange members in substantially parallel spaced relationship at opposite ends of the hub; and a spacer member having a

central, through aperture; the hub comprising substantially circular cross-section, matable female and male hub members, each hub member having a base portion receivable in a respective one of the central openings, and a radial flange adapted to engage the respective reel end flange member, means being provided for restraining relative rotation between the hub members and the spacer member in the assembled condition of the reel, the female hub member having a circular cross-section female mating portion extending co-axially from its base portion, a central bore extending through the female mating portion, the male hub member having an elongate, male mating portion extending centrally from its base portion; is characterised by at least one internal radially inwardly directed arcuate flange at the free end of the female mating portion, and an abutment extending the length of the bore from an edge of the flange, the male mating portion having a plurality of interrupted rings on the outer surface thereof, each ring comprising at least one radially extending arcuate rib, at least one keying member extending from the base portion of the male mating portion and being shaped for keying engagement in the central aperture of the spacer member, which aperture is of non-circular cross-section, the mating portions being such that the flange or flanges can be passed between the ribs of the female mating portion and the hub members relatively rotated to bring the ribs and the flange or flanges into locking engagement, a cantilever latch arm on the, or each, keying member extending from a position thereon remote from the base portion of the male mating portion towards the flange of such base portion for latching the male hub member to its respective reel flange member.

For a better understanding of the invention reference will now be made by way of example to the accompanying drawings, in which:

Figure 1 is an exploded perspective view of a rotary storage reel assembly;

Figure 2 is an enlarged perspective view of two mating hub members of the assembly;

Figure 3 is an enlarged, fragmentary, axial sectional view of the storage reel assembly in its assembled condition to provide a rotary storage reel; and

Figure 4 is an enlarged perspective view of a metal insert for the assembly.

As shown in Figures 1 to 3, a rotary storage reel assembly 10, comprises a pair of substantially identical reel end flange members 12 and 14 formed from thin, rigid stock material, for example metal or pressboard, the members 12 and 14 having central circular through openings 16 and 18, respectively. The assembly also comprises a spacer member 20 having a central square through aperture 22 and preferably being made from expanded polystyrene, and mating female and male hub members 24 and 26.

The female hub member 24 has a circular base portion 27 externally shaped for reception in one of the openings 16 or 18 of the reel end flange

members and being provided with a radially extending flange 28 for engaging the axially outer face of the one reel end flange member. A circular cross-section tubular cylindrical mating portion 30 extending co-axially from the portion 27 has a through bore 32 at the extreme right hand (as seen in Figure 2) end of which are two internal, radially extending flanges 34 and 36 each having in its axially inward surface, a detent notch 38 (only one of which is shown), the notches being identical. An abutment in the form of a stop rib 40 (Figures 1 and 3) extends the full length of the wall of the bore 32 adjacent to one end of the flange 34. The base portion 27 has two finger grip apertures 42 and 44 formed therein.

The hub member 26 has a base portion 46 externally shaped for reception in the other of the openings 16 or 18 of the reel end flange members 12 and 14 and having a radially extending flange 48 for engaging the radially outer face of the other flange member 12 and 14. A pair of wedge shaped keying portions 50 or 52 extending from the base portion 46 each has a cantilever latch arm 54 diverging from the portion 50 or 52 in the axially outward direction of the assembly 10 when in its assembled condition (as best seen in Figure 3), each arm 54 terminating back from the plane of the flange 48. The outer peripheral surfaces of the portions 50 and 52 conform to the walls of the aperture 22 in the spacer member 20 so as to key the hub member 26 thereto. A circular cross-section tubular mating portion 56 extending coaxially from the centre of the base portion 46 has a central bore 58, a plurality of segmental locking ribs 62 and 64 on the external surface of the mating portion 56 being arranged in two opposed rows to provide a series of interrupted locking rings coaxial with the portion 56 and being constantly spaced from one another in axial direction thereof. Each rib 62 and 64 has a detent projection 66 extending axially outwardly of the assembly 10 and being complementary with each notch 38 of the hub member 24, (only the projections 66 of the ribs 62 are shown).

The hub members 24 and 26 are preferably moulded from a hard wearing plastics material of high rigidity.

In practice a stock of reel flange members 12 and 14 of different diameters and spacer members 20 of different thicknesses, are held in store so that finished reels of different diameters and thickness, can be constructed to meet individual requirements.

In order to produce a finished reel, reel end flange members 12 and 14 of the required diameter and a spacer member 20 of the required thickness are first selected, together with a male and a female hub member these being essentially universal members of standard dimensions for use with any of the reel flange and spacer members held in store.

The male hub member 26 is first inserted through the opening 16 of the reel end flange member 12 (for example) so that the latch arms 54 engage the inner face of the flange member 12

(see Figure 3) whereby the reel end flange member 12 is held firmly in position between the latch arms 54 and the flange 48 of the hub member 26. The spacer member 20 is then mounted on the keying portion 50 and 52 of the member 26 so that these portions extend through the aperture 22 of the member 20 whereby the members 20 and 26 are keyed together and are frictionally engaged with one another. The mating portion 30 of the hub member 24 is then inserted through the opening 18 in the reel end flange member 14 and is mated with, and locked to, the mating portion 56 of the hub member 26 as described below.

The hub members are shown in Figure 2 in aligned relationship as they would be in their fully mated and locked condition. In order to mate the two hub members 24 and 26 they are positioned so as to be relatively rotated by 90° with respect to the angular positions in which the hub members 24 and 26 are shown in Figure 2, so that ribs 62 and 64 of the hub member 26 are aligned with the spaces between the flanges 34 and 36 of the hub member 24. The portion 56 is inserted into the bore 32, to an extent determined by the widths of the spacer 20 and the reel end flange members 12 and 14, until the flanges 34 and 36 are aligned with the space between a pair of adjacent ribs 62 and that between the opposed pair of ribs 64, after which the hub members 24 and 26 are relatively rotated to their angular positions of Figure 2, in which each flange 34 and 36 is interposed between an adjacent pair of the ribs 62 and 64 and the detent projections 66 of those ribs engage in the detent notches 38 of the flanges, continued relative rotation of the hub members 24 and 26 in the same sense being prevented by the abutment of the ribs 62 against the stop rib 40. The hub members 24 and 26 are thus releasably locked together. The reel end flange member 14 is held in position between the flange 28 of the hub member 24 and the spacer member 20, as shown in Figure 3. The hub members can be released from one another by relatively rotating the hub in the opposite sense to that described above and then withdrawing the portion 56 from the bore 32.

The reel assembly described above may be modified in various ways, for example, there may be only one, or more than two flanges 34 and 36 and more than two rows of ribs 62 and 64 on the portion 56. The ribs may be on the female hub member and the flange or flanges on the male hub member, the aperture 22 may be other than square, the portions 50 and 52 being appropriately modified in shape. The spacer member may be of any suitable form, being spoked for example. The finger grip apertures 42 and 44 may be of a number other than two and may be in the form of recesses rather than apertures. There may for example be only one latch member 54.

As shown in Figure 4, a metal insert 70 has a square base wall 72 from which extend four rectangular side walls 74 so that the insert 70 has the form of an open rectangular box or tray. The wall 72 has a central circular opening 76 and four

smaller circular openings 78 constantly spaced about the opening 76. The insert 70 is for inclusion in the assembly 10 where the finished reel is to be subjected to considerable torque when in use. In assembling the finished reel, the insert 70 is inserted into the aperture 22 of the spacer member 20 so that the open side of the insert 70 will face the reel end flange member 12. In the assembled condition of the reel assembly, the keying portions 50 and 52 of the hub member 26 engage the inner surfaces of the side walls 74 of the insert 70, with the mating portion 56 of the hub member 26 extending through the central aperture 76 of the insert 70. Prior to mating the hub member 24 and 26, fasteners (not shown) may be inserted through two of the smaller openings 78 which are aligned with openings 80 in the portions 50 and 52, to secure the insert 70 more firmly against rotation relative to the hub members. The insert 70 thus serves to increase the resistance of the finished reel to torque developed when the reel is in use. It has been found that such resistance to torque can be optimized by making the spacer 20 of expanded polystyrene.

The finger grip apertures 42 and 44 (or finger grip recesses) may be employed to receive driving members (not shown) e.g. spindles, for rotating the finished reel about an axle (not shown) passed through the bores 32 and 58 of the hub member. The driving members may also extend from the apertures 42 and 44 through those openings 78 of the insert 70 (when such is provided), which are not occupied by the fasteners mentioned above, if these openings 78 are aligned with the apertures 42 and 44.

Claims

1. A rotary storage reel assembly comprising first and second reel end flange members (12 and 14) each having a central through opening (16 or 18); a tubular hub (24, 26) for reception in the openings (16 and 18); locking means (36, 62) for releasably securing the reel end flange members (12 and 14) and the hub (24, 26) in assembled relationship, with the hub (24, 26) received in the openings and the reel end flange members (12 and 14) in substantially parallel spaced relationship at opposite ends of the hub (24, 26); and a spacer member (20) having a central through aperture (22); the hub comprising two matable hub members (24 and 26) each of which can be passed through a respective one of the central openings (16 and 18) to an extent limited by stop means (28 or 48) on the respective hub members (24 or 26), to mate in the central aperture (22) of the spacer member (20) when such is interposed between the reel end flange members (12 and 14), means (40 and 50 or 52) being provided for restraining relative rotation between the hub members (24 and 26) and the spacer member (20) in the assembled condition of the reel; characterised in that the locking means comprise at least one locking flange (36) on one hub member (24) and at least one row of locking ribs (62) on the other

hub member (26), the row extending axially thereof, the or each locking flange (36) being interposeable between a selected adjacent pair of the locking ribs (62) by relatively rotating the hub members (24 and 26) when in their mating relationship, to an extent limited by an abutment (40) carried by one (24) of the hub members (24 and 26), one hub member (26) having a keying portion (50 or 52) which is insertable into the central aperture (22) of the spacer member (20), which aperture (22) is of non-circular cross-section, to key such hub member (26) to the spacer member (20).

2. An assembly according to Claim 1, characterised in that it further comprises a metal insert (70) for co-operation with the keying portion (50 or 52), the insert (70) having a base wall (72) conforming to the shape of the central aperture (22) of the spacer member (20) and a central opening (76) for the hub members (24 and 26), sidewalls (74) extending from the base wall (72) for engaging the wall of the central aperture (22) of the spacer member (20).

3. An assembly according to Claim 1 or 2, characterised in that the locking ribs (62) are in the form of a series of interrupted circular rings extending circumferentially about the outer surface of the other hub member (26).

4. An assembly according to Claims 1, 2 or 3, characterised in that at least one (26) of the hub members comprises a co-operating cantilever latch arm (54) and peripheral flange (48) for latching such hub member (26) to the respective reel end flange member (12), and a finger grip aperture (42, 44) or recess for use in relatively rotating the hub members (24 and 26) and for receiving a reel driving member.

5. A pair of matable hub members for an assembly according to Claim 1, each hub member (24 and 26) comprising a base portion (27 or 48) having a flange (28 or 48) for abutment against the respective reel end flange member (12 or 14) and a mating portion (30 or 56) in the form of a circular, or substantially circular, cross-section tube extending substantially centrally from the base portion (27 or 46), the mating portion (30) of one hub member (24) being adapted to receive the mating portion (56) of the other hub member (26), characterised in that the other hub member (26) carries locking ribs (62 and 64) in the form of a series of spaced, interrupted rings extending circumferentially about the outer surface of its mating portion (56), and the one hub member (24) carries a plurality of locking flanges (34 and 36) extending axially inwardly from the inner surface of its mating portion (30) at its end remote from its base portion (27), an abutment in the form of a rib (40) extending from one of the locking flanges (34) towards the base portion (27) of the one hub member (24) for limiting relative rotation of the hub members when in their mating relationship, one of the hub members (26) having a keying portion (50) extending from its base portion (46) alongside the mating portion (58), for co-operation with the walls of the central aperture (22) of

the spacer member (20) to key the hub member (26) to the spacer member (20).

6. A pair of hub members according to Claim 5, characterised in that one of the hub members has a cantilever latch arm (54) diverging from a position on the hub member (26) remote from its base portion (46) towards such base portion (46) and being arranged to co-operate with the flange (48) of such hub member (26) to latch the hub member (26) to the respective reel flange member (12).

7. A rotary storage reel assembly comprising first and second reel and flange members (12 and 14) each having a central through opening (16 or 18); a hub (24, 26) for reception in the openings 16 and 18); locking means (36, 62) for releasably securing the flange members (12 and 14) and the hub (24, 26) in assembled relationship, with the hub (24, 26) received in the openings (16 and 18) and the flange members (12 and 14) in substantially parallel spaced relationship at opposite ends of the hub (24, 26); and a spacer member (20) having a central, through aperture (22); the hub comprising substantially circular cross-section, matable female and male hub members (24 and 26), each hub member (24 and 26) having a base portion (27 and 46) receivable in a respective one of the central openings (16 and 18), and a radial flange (28 and 48) adapted to engage the respective reel end flange member (12 or 14), means (40 and 50 or 52) being provided for restraining relative rotation between the hub members (24 and 26) and the spacer member (20) in the assembled condition of the reel, the female hub member (24) having a circular cross-section female mating portion (30) extending co-axially from its base portion (27), a central bore (32) extending through the female mating portion (30), the male hub member (26) having an elongate, male mating portion (56) extending centrally from its base portion (46); characterised by at least one internal radially inwardly directed arcuate flange (34) at the free end of the female mating portion (30), and an abutment (40) extending the length of the bore (32) from an edge of the flange (34), the male mating portion (56) having a plurality of interrupted rings on the outer surface thereof, each ring comprising at least one radially extending arcuate rib (62, 64), at least one keying member (50 or 52) extending from the base portion (46) of the male mating portion (58) and being shaped for keying engagement in the central aperture (22) of the spacer member (20), which aperture is of non-circular cross-section, the mating portions (30 and 56) being such that the flange or flanges (34, 36) can be passed between the ribs (62, 64) of the female mating portion (30) and the hub members (24 and 26) relatively rotated to bring the ribs (62, 64) and the flange or flanges (34, 36) into locking engagement, a cantilever latch arm (54) on the, or each, keying member (50 or 52) extending from a position thereon remote from the base portion (46) of the male mating portion (58) towards the flange (48) of such base portion (46) for latching the male hub

member (26) to its respective reel flange member (12).

Patentansprüche

1. Drehbare Aufnahmespulen-Anordnung mit ersten und zweiten Spulenendflanschgliedern (12 und 14), die je eine zentrale Durchgangsöffnung (16 oder 18) haben; mit einer rohrförmigen Nabe (24, 26) zur Aufnahme in der Öffnung (16 und 18), mit Verriegelungsmitteln (36, 62) zum lösbaren Verbinden der Spulenendflanschglieder (12 und 14) und der Nabe (24, 26) im zusammengebauten Zustand, wobei die Nabe (24, 26) in den Öffnungen aufgenommen ist und die Spulenendflanschglieder (12 und 14) sich im wesentlichen parallel und mit Abstand voneinander an entgegengesetzten Enden der Nabe (24, 26) befinden; und mit einem Abstandsglied (20), das eine zentrale Durchgangsöffnung (22) hat; wobei die Nabe zwei zueinander passende Nabenglieder (24 und 26) hat, von denen jedes durch eine der zentralen Öffnungen (16 und 18) in einem Ausmass hindurchgeführt werden kann, das durch Anschlagglieder (28 oder 48) an den jeweiligen Nabengliedern (24 oder 26) begrenzt ist, um innerhalb der zentralen Öffnung (22) des Abstandsgliedes (20) zusammenzupassen, wenn ein solches zwischen die Spulenendflanschglieder (12 und 14) eingesetzt ist, wobei Mittel (40 und 50 oder 52) zum Begrenzen der Relativdrehung zwischen den Nabengliedern (24 und 26) und dem Abstandsglied (20) im zusammengebauten Zustand der Spule vorgesehen sind; dadurch gekennzeichnet, dass die Verriegelungsmittel wenigstens einen Verriegelungsflansch (36) an einem Nabenglied (24) und wenigstens eine Reihe von Verriegelungsrippen (62) an dem anderen Nabenglied (26) aufweisen, wobei sich die Reihe in dessen Axialrichtung erstreckt, wobei der oder jeder Verriegelungsflansch (36) zwischen ein ausgewähltes benachbartes Paar von Verriegelungsrippen (62) durch Relativverdrehung der Nabenglieder (24 und 26) einfügbar ist, wenn diese sich in ihrer zusammenpassenden Stellung befinden, und zwar bis zu einem Ausmass, das durch einen Anschlag (40) begrenzt ist, der von einem (24) der Nabenglieder (24 und 26) getragen ist, wobei eines der Nabenglieder (26) einen Eingriffsteil (50 oder 52) hat, der in die zentrale Öffnung (22) des Abstandsgliedes (20) einsetzbar ist, wobei die Öffnung (22) einen nicht kreisförmigen Querschnitt hat, um zwischen dem Nabenglied (26) und dem Abstandsglied (20) einen Eingriff herzustellen.

2. Anordnung nach Anspruch 1, dadurch gekennzeichnet, dass sie ferner einen Metalleinsatz (70) zum Zusammenwirken mit dem Eingriffsteil (50 oder 52) aufweist, wobei der Einsatz (70) eine Hauptwand (72) hat, die zu der Form der zentralen Öffnung (22) des Abstandsgliedes (20) passt, sowie eine zentrale Öffnung (76) für die Nabenglieder (24 und 26) und Seitenwände (74), die sich von der Hauptwand (72) zum Eingriff mit der Wand der zentralen Öffnung (22) des Abstands-

gliedes (20) erstrecken.

3. Anordnung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Verriegelungsrippen (62) die Gestalt einer Reihe von unterbrochenen kreisförmigen Ringen haben, die sich in Umfangsrichtung um die äussere Oberfläche des anderen Nabengliedes (26) herum erstrecken.

4. Anordnung nach den Ansprüchen 1, 2 oder 3, dadurch gekennzeichnet, dass wenigstens eines (26) der Nabenglieder einen damit zusammenwirkenden und von ihm vorragenden Schnapparm (54) und einen Umfangsflansch (48) zum Verriegeln dieses Nabengliedes (26) mit dem zugehörigen Spulenendflanschglied (12) aufweist, und dass eine Fingeröffnung (42, 44) oder eine Ausnehmung zur Verwendung bei der Relativverdrehung der Nabenglieder (24 und 26) und zur Aufnahme eines Spulenantriebsgliedes vorgesehen ist.

5. Ein Paar zusammengehöriger Nabenglieder für eine Anordnung nach Anspruch 1, wobei jedes Nabenglied (24 und 26) einen Hauptteil (27 oder 46) mit einem Flansch (28 oder 48) zur Anlage gegen das zugehörige Spulenendflanschglied (12 oder 14) und einen mit dem anderen Nabenglied zusammenfügbaren Teil (30 oder 56) in der Form eines Rohres mit kreisförmigem oder im wesentlichen kreisförmigem Querschnitt aufweist, wobei sich das Rohr im wesentlichen zentral von dem Hauptteil (27 oder 46) weg erstreckt, wobei das zusammenfügbare Teil (30) eines Nabengliedes (24) zur Aufnahme des zusammenfügbaren Teils (56) des anderen Nabengliedes (26) ausgebildet ist, dadurch gekennzeichnet, dass das andere Nabenglied (26) Verriegelungsrippen (62 und 64) trägt, die die Form einer Reihe von mit gegenseitigen Abständen angeordneten, unterbrochenen Ringen haben, die sich in Umfangsrichtung um die äussere Oberfläche seines zusammenfügbaren Teils (56) herum erstrecken, und dass das eine Nabenglied (24) eine Mehrzahl von Verriegelungsflanschen (34 und 36) trägt, die sich von der inneren Oberfläche seines zusammenfügbaren Teils (30) an dessen von seinem Hauptteil (27) entfernt liegenden Ende radial nach innen erstrecken, wobei sich ein Anschlag in der Form einer Rippe (40) von einem der Verriegelungsflansche (34) gegen den Hauptteil (27) eines der Nabenglieder (24) erstreckt, um die Relativverdrehung der Nabenglieder in deren zusammengefügter Stellung zu begrenzen, wobei eines der Nabenglieder (26) einen Eingriffsteil (50 oder 52) hat, der sich von seinem Hauptteil (46) längs des zusammenfügbaren Teils (56) erstreckt und der zum Zusammenwirken mit den Wänden der zentralen Öffnung (22) des Abstandsgliedes (20) bestimmt ist, um das Nabenglied (26) mit dem Abstandsglied (20) in Eingriff zu bringen.

6. Paar von Nabengliedern nach Anspruch 5, dadurch gekennzeichnet, dass eines der Nabenglieder einen vorragenden Schnapparm (54) aufweist, der von einer Stelle an dem Nabenglied (26), die von seinem Hauptteil (46) entfernt liegt, gegen den Hauptteil (46) hin vorragt, und der so angeordnet ist, dass er mit dem Flansch (48) die-

ses Nabengliedes (26) zusammenwirkt, um das Nabenglied (26) mit dem zugehörigen Spulenflanschglied (12) zu verriegeln.

7. Drehbare Aufnahmespulen-Anordnung mit ersten und zweiten Spulenendflanschgliedern (12 und 14), die je eine zentrale Durchgangsöffnung (16 oder 18) aufweisen; mit einer Nabe (24, 26) zur Aufnahme in den Öffnungen (16 und 18); mit Verriegelungsmitteln (36, 62) zur lösbaren Befestigung der Flanschglieder (12 und 14) und der Nabe (24, 26) in den Öffnungen (16 und 18) aufgenommen ist und die Flanschglieder (12 und 14) in im wesentlichen paralleler Stellung mit gegenseitigem Abstand an entgegengesetzten Enden der Nabe (24, 26) angeordnet sind; und mit einem Abstandsglied (20) mit einer zentralen Durchgangsöffnung (22); wobei die Nabe zueinanderpassende aufnehmende und aufgenommene Nabenglieder (24 und 26) mit im wesentlichen kreisförmigem Querschnitt aufweist, wobei jedes Nabenglied (24 und 26) einen Hauptteil (27 und 46) hat, der in einer zugehörigen der zentralen Öffnungen (16 und 18) aufnehmbar ist, sowie einen radialen Flansch (28 und 48), der zum Eingriff mit dem zugehörigen Spulenendflanschglied (12 oder 14) geeignet ist, wobei Mittel (40 und 50 oder 52) zur Begrenzung der Relativverdrehung zwischen den Nabengliedern (24 und 26) und dem Abstandsglied (20) im zusammengesetzten Zustand der Spule vorgesehen sind, wobei das aufnehmende Nabenglied (24) einen aufnehmenden zusammenfügbaren Teil (30) mit kreisförmigem Querschnitt hat, der sich koaxial von seinem Hauptteil (27) erstreckt, sowie eine zentrale Bohrung (32), die sich durch den aufnehmenden zusammenfügbaren Teil (30) hindurch erstreckt, und wobei das aufgenommene Nabenglied (26) einen länglichen aufnehmbaren Teil (56) hat, der sich zentral von seinem Hauptteil (46) erstreckt, gekennzeichnet durch wenigstens einen inneren, radial nach innen gerichteten, gekrümmten Flansch (34) am freien Ende des aufnehmenden zusammenfügbaren Teils (30) und einen Anschlag (40), der sich der Länge nach durch die Bohrung (32) von einer Kante des Flansches (34) her erstreckt, wobei der aufnehmbare Teil (56) eine Vielzahl von unterbrochenen Ringen auf seiner äusseren Oberfläche hat, von denen jeder Ring wenigstens eine sich radial erstreckende gekrümmte Rippe (62, 64) aufweist, wobei sich wenigstens ein Eingriffsglied (50 oder 52) von dem Hauptteil (46) des aufnehmbaren Teils (56) erstreckt und zum Eingriff in der zentralen Öffnung (22) des Abstandsgliedes (20) ausgebildet ist, welche einen nicht kreisförmigen Querschnitt hat, wobei die zusammenfügbaren Teile (30 und 56) so ausgebildet sind, dass der Flansch oder die Flansche (34, 36) zwischen die Rippen (62, 64) des aufnehmbaren Teils (56) eingefügt und die Nabenglieder (24 und 26) relativ zueinander so verdreht werden können, dass die Rippen (62, 64) und der Flansch oder die Flansche (34, 36) in Verriegelungseingriff gebracht werden, wobei sich ein vorragender Schnapparm (54) von einer Stellung an diesem Eingriffsglied, die von dem Hauptteil (46) des auf-

nehmbaren Teils (56) entfernt ist, gegen den Flansch (48) dieses Hauptteils (46) erstreckt, um das aufnehmbare Nabenglied (26) mit seinem zugehörigen Spulenflanschglied (12) in Eingriff zu bringen.

Revendications

1. Ensemble à touret rotatif de stockage comprenant des premier et second flasques extrêmes (12 et 14) de touret traversés chacun par une ouverture centrale (16 ou 18); un moyeu tubulaire (24, 26) destiné à se loger dans l'ouverture (16 et 18), des éléments de blocage (36, 62) destinés à fixer de manière amovible les flasques extrêmes (12 et 14) et le moyeu (24, 26) en position d'assemblage, le moyeu (24, 26) étant logé dans les ouvertures et les flasques extrêmes (12 et 14) étant sensiblement parallèles entre eux et espacés l'un de l'autre aux extrémités opposées du moyeu (24, 26); et un élément (20) d'entretoisement traversé par un trou central (22); le moyeu comprenant deux éléments de moyeu (24 et 26) pouvant être accouplés et pouvant pénétrer chacun dans l'une, respective, des ouvertures centrales (16 et 18) sur une distance limitée par un élément d'arrêt (28 ou 48) porté par l'élément de moyeu respectif (24 ou 26), afin de s'ajuster dans le trou central (22) de l'élément (20) d'entretoisement lorsque ce dernier est interposé entre les flasques extrêmes (12 et 14) du touret, des moyens (40 et 50 ou 52) étant prévus pour s'opposer à toute rotation relative entre les éléments de moyeu (24 et 26) et l'élément d'entretoisement (20) lorsque le touret est assemblé, caractérisé en ce que les éléments de blocage comprennent au moins une bride de blocage (36) située sur un élément de moyeu (24) et au moins une rangée de nervures de blocage (62) située sur l'autre élément de moyeu (26), la rangée s'étendant axialement à cet élément, la ou chaque bride de blocage (36) pouvant être interposée entre deux nervures de blocage (62) adjacentes et choisies par rotation relative des éléments de moyeu (24 et 26), lorsqu'ils sont accouplés l'un à l'autre, sur une distance limitée par une butée (40) portée par l'un (24) des éléments de moyeu (24 et 26), un élément de moyeu (26) comportant une partie de clavetage (50 ou 52) qui peut être insérée dans le trou central (22) de l'élément d'entretoisement (20), lequel trou (22) est de section droite non circulaire, de manière à claveter cet élément de moyeu (26) à l'élément d'entretoisement (20).

2. Ensemble selon la revendication 1, caractérisé en ce qu'il comprend en outre un organe rapporté métallique (70) destiné à coopérer avec la partie d'encliquetage (50 ou 52), l'organe rapporté (70) ayant une paroi de base (72) dont la forme correspond à celle du trou central (22) de l'élément (20) d'entretoisement et une ouverture centrale (76) destinée aux éléments de moyeu (24 et 26), des parois latérales (74) partant de la paroi de base (72) afin de s'engager contre la paroi du trou central (22) de l'élément (20) d'entretoisement.

3. Ensemble selon la revendication 1 ou 2, caractérisé en ce que les nervures de blocage (62) se présentent sous la forme d'une série d'anneaux circulaires interrompus s'étendant circonférentiellement autour de la surface extérieure de l'autre élément de moyeu (26).

4. Ensemble selon les revendications 1, 2 ou 3, caractérisé en ce qu'au moins l'un (26) des éléments de moyeu comprend un bras (54) de verrouillage en porte-à-faux et une bride périphérique (48) qui coopèrent pour verrouiller cet élément de moyeu (26) sur le flasque extrême respectif (12) du touret, et une ouverture (42, 44) de prise des doigts ou un évidement pouvant être utilisé pour produire une rotation relative des éléments de moyeu (24 et 26) et pour recevoir un organe d'entraînement du touret.

5. Paire d'éléments de moyeu pouvant être accouplés et destinés à un ensemble selon la revendication 1, chaque élément de moyeu (24 et 26) comprenant une base (27 ou 48) qui comporte une bride (28 ou 48) destinée à buter contre le flasque extrême correspondant (12 ou 14) du touret et une partie d'accouplement (30 ou 56) se présentant sous la forme d'un tube de section droite circulaire, ou sensiblement circulaire, qui fait saillie à peu près centralement de la base (27 ou 46), la partie d'accouplement (30) d'un élément de moyeu (24) étant destinée à recevoir la partie d'accouplement (56) de l'autre élément de moyeu (26), caractérisée en ce que l'autre élément de moyeu (26) porte des nervures de blocage (62 et 64) se présentant sous la forme d'une série d'anneaux espacés et interrompus qui s'étendent circonférentiellement autour de la surface extérieure de sa partie d'accouplement (56) et en ce que l'élément de moyeu (24) porte plusieurs brides de blocage (34 et 36) qui font saillie axialement vers l'intérieur de la surface intérieure de sa partie d'accouplement (30) à son extrémité éloignée de sa base (27), une butée ayant la forme d'une nervure (40) faisant saillie de l'une des brides (34) de blocage vers la base (27) de l'élément de moyeu (24) afin de limiter la rotation relative des éléments de moyeu lorsqu'ils sont accouplés, l'un des éléments de moyeu (26) comportant une partie (50) de clavetage qui fait saillie de sa base (46) le long de la partie d'accouplement (58) et qui est destinée à coopérer avec les parois du trou central (22) de l'élément (20) d'entretoisement afin de claveter l'élément (26) de moyeu à l'élément (20) d'entretoisement.

6. Paire d'éléments de moyeu selon la revendication 5, caractérisée en ce que l'un des éléments de moyeu comporte un bras de verrouillage (54) en porte-à-faux qui s'écarte d'un point de l'élément de moyeu (26) éloigné de sa base (46) et qui est dirigé vers cette base (46) et disposé de manière à coopérer avec la bride (48) de cet élément (26) de moyeu pour verrouiller l'élément (26) de moyeu sur le flasque correspondant (12) du touret.

7. Ensemble à touret rotatif de stockage comprenant des premier et second flasques extrêmes (12 et 14) de touret traversés chacun par une ouverture centrale (16 ou 18); un moyeu (24, 26) destiné à se loger dans les ouvertures (16 et 18); des éléments de blocage (36, 62) destinés à fixer de manière amovible les flasques (12 et 14) et le moyeu (24, 26) en position d'assemblage, le moyeu (24, 26) étant alors logé dans les ouvertures (16 et 18) et les flasques (12 et 14) étant sensiblement parallèles entre eux et espacés l'un de l'autre aux extrémités opposées du moyeu (24, 26); et un élément (20) d'entretoisement traversé par un trou central (22); le moyeu comprenant des éléments de moyeu femelle et mâle (24 et 26) pouvant être accouplés, de section droite sensiblement circulaire, chaque élément de moyeu (24 et 26) comportant une base (27 et 46) pouvant se loger dans l'une, respective, des ouvertures centrales (16 et 18), et une bride radiale (28 et 48) destinée à s'engager contre le flasque extrême respectif (12 ou 14) du touret, des moyens (40 et 50 ou 52) étant prévus pour empêcher toute rotation relative entre les éléments de moyeu (24 et 26) et l'élément (20) d'entretoisement lorsque le touret est assemblé, l'élément de moyeu femelle (24) comportant une partie femelle d'accouplement (30) de section droite circulaire qui fait saillie coaxialement de sa base (27), un alésage central (32) qui traverse la partie femelle (30) d'accouplement, l'élément mâle (26) de moyeu comportant une partie allongée mâle (56) d'accouplement qui fait saillie centralement de sa base (46), caractérisé par au moins une bride intérieure courbe (34), orientée radialement vers l'intérieur à l'extrémité libre de la partie femelle (30) d'accouplement, et une butée (40) qui s'étend le long de l'alésage (32) à partir d'un bord de la bride (34), la surface extérieure de la partie mâle (56) d'accouplement portant plusieurs anneaux interrompus, chaque anneau comprenant au moins une nervure courbe (62, 64) qui fait saillie radialement, au moins un organe de clavetage (50 ou 52) faisant saillie de la base (46) de la partie mâle (58) d'accouplement et étant configuré pour s'engager par clavetage dans le trou central (22) de l'élément (20) d'entretoisement, lequel trou est de section droite non circulaire, les parties d'accouplement (30 et 56) étant telles que la ou les brides (34, 36) peuvent être passées entre les nervures (62, 64) de la partie femelle (30) d'accouplement et que les éléments de moyeu (24 et 26) peuvent être tournés l'un par rapport à l'autre pour amener les nervures (62, 64) et la ou les brides (34, 36) en engagement de blocage, un bras (54) de verrouillage en porte-à-faux, situé sur le ou chaque organe de clavetage (50 ou 52), faisant saillie d'un point de cet organe éloigné de la base (46) de la partie mâle (58) d'accouplement et étant dirigé vers la bride (48) de cette base (46) afin de verrouiller l'élément mâle (26) d'accouplement sur son flasque respectif (12) de touret.



