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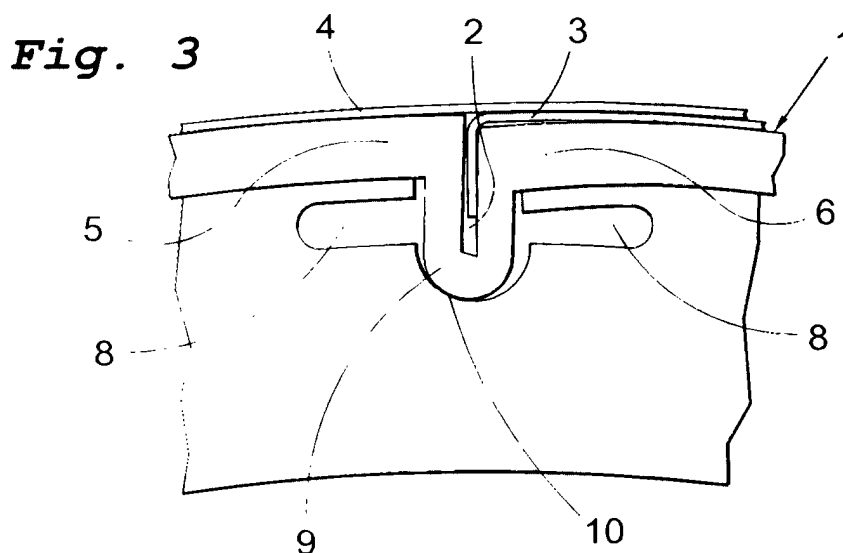
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(54) **Bobbin for the winding of band material**

(57) The present invention relates to a bobbin for the winding of band material (3, 4), which bobbin comprises a surface (1) following the circumference on which surface (1) the band material (3, 4) is wound in the direction of circumference, and which comprises at least one essentially radial, transversal slot (2) in said surface (1)

following the circumference, which slot (2) is formed for the fixing of an end of said band material (3, 4) at the beginning of a winding. The bobbin is provided with at least one resilient portion (5, 6) along the circumference thereof and said slot (2) is arranged in said resilient portion (5, 6) of the bobbin.



EP 1 270 102 A2

Description

[0001] The present invention relates to a bobbin for the winding of band material as is stated in the introduction of claim 1.

[0002] Bobbins, or reels, rolls, drums and the like, are used for the winding or reeling of different types of material. One such use is for the winding of band material. The present invention is in particular adapted for the winding of band material, particularly band steel.

[0003] In this connection, usually bobbins having a winding surface along the circumference thereof are used. In order to apply the end of the band material on the bobbin, for winding, the bobbin according to prior art is provided with a fixed entering slot. Usually said slot is a transversal slot in the radial direction, i.e. the slot extends from the surface following the circumference and inwards in the bobbin, in the radial direction.

[0004] This previously known design of entering slot implies a plurality of disadvantages. One disadvantage is that the slot does not lock the end of the band material with certainty in the proper slot, but the end may occasionally slide out of the slot when the winding is begun. This may lead to the winding having to be begun again from the beginning. Another disadvantage is that an irregularity is formed where the band material leaves the slot, which results in a fold being formed on the thin band steel. This fold goes through a plurality of turns in the beginning of the winding, which results in these material turns not being able to be utilized by the end user, but have to be discarded. This also means that parts of the band are wound without contact with the band turns positioned below and above, respectively, and this may initiate a lateral sliding between the band turns. Thus, the innermost band turns are not fixed in relation to each other.

[0005] Principally the object of the present invention is to solve the above mentioned problem. This object is obtained by a bobbin, which has been given the new features that are stated in the characterizing part of claim 1.

[0006] Thus, a bobbin, according to the present invention, is characterized in that it is provided with at least one resilient portion along the circumference thereof and that at least one slot for fixing an end of the band material is arranged in said resilient portion of the bobbin. When the end of the band material is inserted into this slot, the advantage is obtained that a locking of the end is achieved, radially as well as tangentially. Because of the opening of the fixing slot, which suitably is adapted so that the width of the opening is only somewhat larger than the thickness of the band material, being located in a resilient portion, the band end will, at springing down, be pinched in place when the edges of the slot opening are brought towards each other at springing down, and thereby the band end is prevented from sliding out of the position thereof as long as the spring is loaded by wound band material.

[0007] An additional advantage of the present invention is that the achieved springing away of the portion where the fixing slot is, provides a smooth ridgeless transition for the band material, both between the inserted band end and the beginning of the first winding turn, and also between a number of band turns following thereafter where they are overlapping each other, and thereby unfavourable band folds are avoided. By this springing away, an improved material support is also obtained radially as well as axially, which prevents lateral slidings between the band turns. This in turn makes it possible to completely utilize all wound material, since no band folds are found, which gives economical advantages for the user.

[0008] According to an advantageous embodiment, the resilient portion is formed as two resilient tongues, between which the slot is arranged. Said tongues may be arranged by the bobbin having been provided with at least one recess extending in the direction of circumference and at a certain distance from the surface following the circumference.

[0009] According to an additional advantageous feature, the bobbin also comprises a stroke-limiting device arranged in an area where the tongues connect to each other and where said slot is arranged. This stroke-limiting device prevents the resilient portion from being pressed in further than what is suitable in view of the fact that the wound band material all the time is to have a support both axially and radially in the form of friction between the band turns.

[0010] Additional features and advantages thereof are evident from the remaining dependent claims.

[0011] The present invention will now be disclosed in detail, by a not limiting example of embodiment illustrated in the accompanying drawing.

[0012] Figure 1 shows, schematically in a side view, a part of a bobbin according to prior art with two parts of a band.

[0013] Figure 2 shows, schematically in perspective, a part of a bobbin according to the present invention having a resilient portion with a fixing slot for a band end.

[0014] Figure 3 shows, schematically in a side view, the part of the bobbin in figure 2 with two parts of a band.

[0015] The bobbin according to prior art illustrated in figure 1 comprises a surface 1 along the circumference thereof, on which band material 3, 4 have been wound in the direction of the circumference. For the sake of clarity, only a part of a first 3 and a second 4, respectively, layer/turn of band material 3, 4 is shown on the bobbin. An undesired deformation 11 arises in the band material.

[0016] Also the bobbin according to the invention illustrated in figures 2 and 3 comprises a surface 1 along the circumference thereof, on which band material 3, 4 is wound in the direction of the circumference. In figure 2, the bobbin is in a starting position without band material and in figure 3 the band material has been wound, only a part of a first 3 and a second 4, respectively, layer/

turn of band material 3, 4 being shown. In the surface 1, a slot 2 is arranged. The slot 2 extends inwards, in the radial direction, in the bobbin and normally runs all over the transversal width thereof. Said slot 2 is intended for the fixing of an end of the band material 3, 4 that should be wound. Preferably the opening of the slot 2 has a width (in the direction of circumference) which is only somewhat greater than the thickness of the material 3, 4 that should be wound. The width of the opening should be adapted so that it is large enough for the band end to be easily inserted into the slot 2 at the same time as the opening should be narrow enough for clamping the band end at a small springing down of the slot portion, see figure 3. No undesired deformation arises in the band material.

[0017] The slot 2 is arranged in a part of the bobbin, which is formed as a resilient portion. This resilient portion comprises two resilient tongues 5, 6, between which the slot 2 is arranged. Under these tongues, i.e. in the radial direction inside these tongues, a recess 8 is arranged which extends in the direction of circumference and at a certain distance from the surface 1 following the circumference. It is this recess 8 that enables springing down of the tongues 5, 6. Of course, also the material in the bobbin has to be such that springing down becomes feasible. Also the slot 2 as such contributes to enable the springing down.

[0018] As is evident from the illustrated example, the slot 2 does not preferably extend all the way down to the recess 8, i.e. it is not a through slot which divides the tongues 5, 6, even if it would of course be fully feasible.

[0019] Under the slot 2, a shoulder 9 is arranged, which works as a stroke-limiting device 9. This shoulder is formed as a portion of the resilient tongues 5, 6 protruding into the recess 8, i.e. it projects in the radial direction inwards on the bobbin. Preferably the slot 2 extends partly into said shoulder 9, and could also go through the shoulder 9. The recess 8 is advantageously so formed that it is provided with a depression 10 under said shoulder 9. The possibility of springing down is determined by the free distance that exists between the lower part of the shoulder 9 and the bottom of the recess 8 or of the depression 10. The depression 10 in combination with the shoulder 9 makes the springing down of the tongues 5, 6 and in particular the area where the slot 2 is situated being limited by the fact that the shoulder 9 knocks against the bottom of the depression 10.

[0020] The present invention should not be regarded as limited to the above described example of embodiment, but may be varied and modified in many ways, as is realized by a person skilled in the art, within the scope of the accompanying claims.

Claims

1. Bobbin for the winding of band material (3, 4), which bobbin comprises a surface (1) following the cir-

cumference on which surface (1) the band material (3, 4) is wound in the direction of circumference, and which comprises at least one essentially radial, transversal slot (2) in said surface (1) following the circumference, which slot (2) is formed for the fixing of an end of said band material (3, 4) at the beginning of a winding, **characterized in that** the bobbin is provided with at least one resilient portion (5, 6) along the circumference thereof, which portion (5, 6) constitutes a part of the surface (1) of the bobbin which surface (1) is following the circumference, and that said slot (2) is arranged in said resilient portion (5, 6) of the bobbin.

2. Bobbin according to claim 1, **characterized in that** said resilient portion (5, 6) comprises two resilient tongues (5, 6), between which said slot (2) is arranged.

3. Bobbin according to claim 2, **characterized in that** said resilient tongues (5, 6) are arranged by the fact that the bobbin being provided with at least one recess (8) extending in the direction of circumference and at a certain distance from the surface (1) following the circumference, and that said tongues (5, 6) being at least partly separated by said slot (2).

4. Bobbin according to any one of the preceding claims, **characterized in that** it comprises a stroke-limiting device (9).

5. Bobbin according to claim 4, **characterized in that** the stroke-limiting device (9) is arranged in an area where the tongues (5, 6) connect to each other and where said slot (2) is arranged.

6. Bobbin according to claim 4 or 5, **characterized in that** the stroke-limiting device (9) comprises a shoulder (9) which projects inwards, in the radial direction.

7. Bobbin according to claim 6, **characterized in that** said slot (2) extends partly into said shoulder (9).

8. Bobbin according to claim 7, **characterized in that** said recess (8) extends under said shoulder (9) and that the recess (8) under the shoulder (9) has been provided with a depression (10) in order to enable springing down of said shoulder (9).

Fig. 1

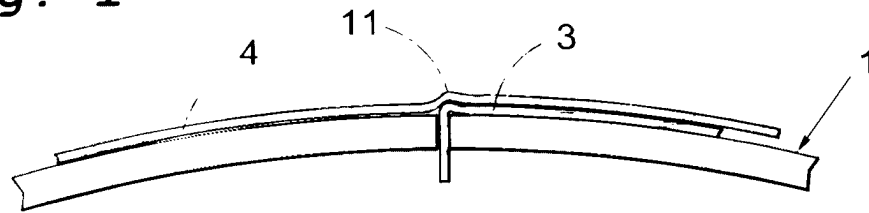


Fig. 2

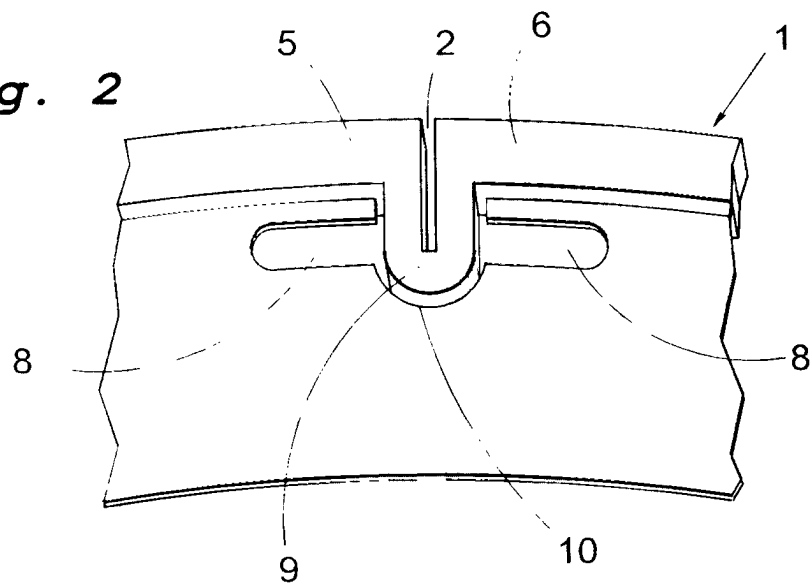


Fig. 3

