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A scraping roller (1) is disclosed for scraping the flesh side of an animal pelt. The roller comprises a plurality of teeth (8) each having a scraping edge (4), the scraping roller comprising a core part (2) and an outer layer (3) in which the scraping edges (4) are formed, wherein the outer layer is made from a plastic material of a hardness in the range of Shore 60A and Shore 95A and the core part (2) is made from a plastic material of a hardness of at least Rockwell 60R, and wherein the outer layer (3) adhere to the core part (2) at interfaces between the outer layer (2) and the core part (3). The use of the scraping roller (1) for scraping the flesh side of a pelt, in particular a mink pelt, is furthermore disclosed.

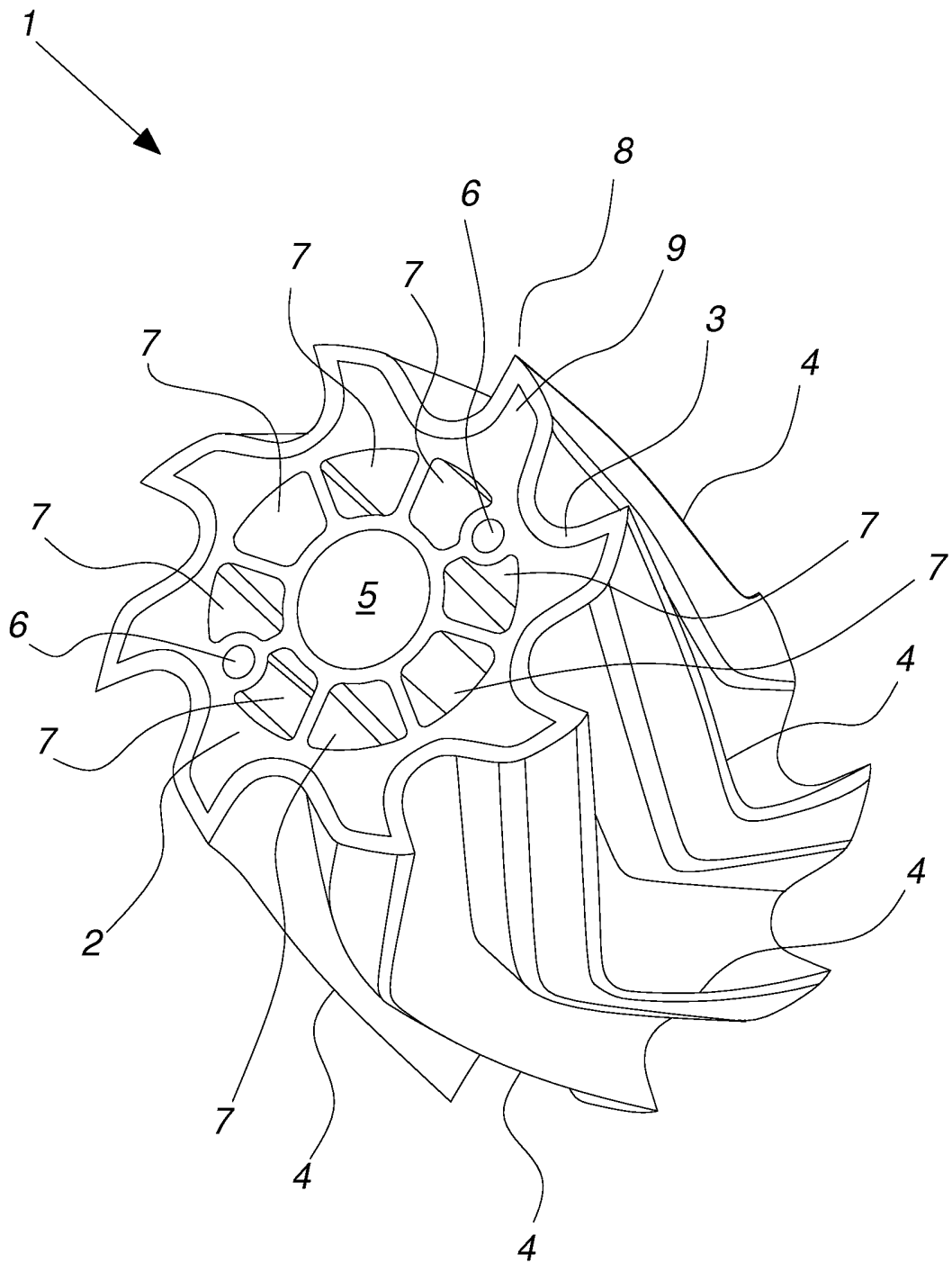


Fig. 1

SCRAPING ROLLER WITH CORE PART

The present invention relates to a scraping roller for scraping the flesh side of a pelt of a furred animal, in particular of a tubular pelt arranged on a mandrel in a scraping apparatus.

BACKGROUND

The use of scraping rollers for scraping the flesh side of pelts of furred animals, such as mink or fox is well known in the art, see e.g. Danish patent DK 177 580 B1 and European patent applications EP 2 562 269 A1 and EP 2 599 881 A1.

It is an object of the present invention to provide such scraping rollers that are less expensive to manufacture.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

The scraping roller according to the present invention for scraping the skin side of an animal pelt comprises a plurality of teeth, each having a scraping edge, the scraping roller comprising a core part and an outer layer in which the scraping edges are formed, wherein the outer layer is made from a plastic material of a hardness in the range of Shore 60A and Shore 95A and the core part is made from a plastic material of a hardness of at least Rockwell 60R, and wherein the outer layer adhere to the core part at interfaces between the outer layer and the core part. This scraping roller deviates from the known scraping rollers that are made in one relatively soft material, such as thermoplastic polyurethane, in that the core part is made from a harder material, which generally is less expensive to use for manufacture of such part and which also can provide other advantages as discussed below.

The outer layer may be made from a number of elastic materials, in particular from thermoplastic and thermosetting material, such as natural rubber, but it is preferred that it is made from polyurethane, preferably thermoplastic polyurethane.

Alternatively, it may be made from another synthetic rubber material or a combination of rubber materials.

5 The scraping roller is preferably manufactured by injection moulding, where the core part is made in one mould and the outer layer is made in a second mould in which the core part is placed, which will make the core part and the outer layer adhere to each other at the interfaces between the two parts. The outer layer covers at least part of the teeth so that the scraping edges are formed in the outer layer material, and in a preferred embodiment the outer layer is made as one continuous part covering the
10 whole of the overall cylindrical surface of the scraping roller comprising the teeth.

The hardness of the material of the outer layer is preferably in the range of Shore 78A to Shore 88A, more preferably in the range of Shore 82A to Shore 84A in order to provide a satisfactory scraping result. The material thickness of the outer layer at
15 the scraping edges is in the range of 3 to 25 millimetres.

In a preferred embodiment, the core part comprises core extensions into the teeth, the core extensions preferably extending as ridges in the range of 8 to 20 millimetres from a cylindrical base of the core part. The core part has a substantially cylindrical
20 base that is coaxial with the axis of rotation of the scraping roller and comprises in this embodiment core extensions made from the material of the core part and in the same material for improving the stiffness of the teeth and prevent deformation of the teeth during operation of the scraping roller, in which it is rotated by the scraping apparatus and is pressed against the flesh side of the pelt with a biasing force.
25 Hereby, the most suited shape of the teeth can be preserved during operation, substantially regardless of the magnitude of the biasing force.

The core part is in a preferred embodiment made from a fibre reinforced plastic material which improves the stiffness of the core part and allow for the introduction
30 of cavities in the core part, which may reduce the use of material for the manufacture of the scraping roller and at the same time reduces the weight of the scraping roller.

The plastic material is in a more preferred embodiment reinforced with from 10 to 40 volume-% fibres, preferably from 25 to 35 volume-%, and the fibres are preferably glass fibres.

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The core part comprises in a preferred embodiment a plurality of hollow cavities, said cavities preferably extending in a longitudinal direction of the scraping roller.

The core part is in a more preferred embodiment made from a plastic material of a
10 hardness of at least Rockwell 75R, preferably at least Rockwell 90R, and a preferred material for the core part is polyamide, preferably aliphatic polyamide (e.g. Nylon), such as PA6 or PA66.

The present invention furthermore relates to the use of a scraping roller as described
15 herein for scraping the flesh side of a pelt, preferably a mink pelt.

BRIEF DESCRIPTION OF THE DRAWING

Embodiments of the present invention are illustrated with the enclosed drawing of which

20 Fig. 1 is a perspective view of a scraping roller according to a first embodiment of the present invention,

Fig. 2 is a perspective view of a scraping roller according to a second embodiment of the present invention, and

25 Fig. 3 is a perspective view of a scraping roller according to a third embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE PRESENT INVENTION

All embodiments of the scraping rollers 1 according to the present invention as shown in Figs. 1, 2 and 3 comprise a core 2 manufactured in one material, typically a
30 hard plastic material, and an outer layer 3 of another more elastic material in which the plurality of scraping edges 4 of the scraping roller 1 are formed.

The core 2 has in the embodiments of Figs. 1 and 2 an axial bore 5 for accommodating a driving shaft (not shown) of a driving electric motor for rotating the roller 1 around its centre axis to scrape the skin side of an animal pelt such as a mink pelt. Further drive openings 6 are provided for engaging with pins (not shown) that are arranged to be driven together with the driving shaft so as to transfer sufficient torque to the scraping roller 1. The core part 2 of the scraping roller 1 is furthermore provided with a plurality of longitudinally extending cavities 7 which are provided for reducing the amount of material and thus the costs of manufacturing the scraping roller as well as the weight thereof. This is made possible by manufacturing the core part 2 in a hard plastic material, preferably aliphatic polyamide (Nylon) reinforced with 30 volume-% glass fibres, which makes the core part 2 sufficiently stable in shape for the cavities 7 to be formed without any adverse consequences for the operational features of the scraping roller 1.

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The core part 2 has the outer shape of a substantially cylindrical base provided with extensions 9 into each of said teeth 8, the extensions 9 being formed as ridges of substantially the cross-sectional shape as the teeth 8, which are formed by the outer layer 3 that is provided in a thickness of about 5 millimetres onto the extensions 9.

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The teeth 8 shown in Fig. 1 are of a V-shape where the axial position of the vertex of the scraping edges 4 is different for neighbouring edges 4 as disclosed in European patent application EP 2 562 269 A1. Other shapes of the scraping edges, such as regular V-shape, straight edges, helical edges or U-shaped edges could also be foreseen.

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A somewhat different embodiment of a scraping roller 1 according to the present invention is shown in Fig. 2, which deviates from the scraping roller of Fig. 1 in that the extensions 9 of the core part 2 of the scraping roller 1 are formed as ridges of a substantially triangular cross-sectional shape, i.e. different from the cross-sectional shape of the teeth 8, which are formed by the outer layer 3 that for this embodiment

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is provided in a thickness of between 4 and about 15 millimetres onto the extensions 9.

5 The extensions 9 of the core part 2 are in both embodiments, i.e. as shown in Figs. 1 and 2, made in the material of the core part 2 and have identical functions of stabilising the teeth 8 so that the outer shape of the teeth 8 and thus the scraping edges 4 is maintained substantially constant during operation of the scraping roller where it is rotated and forced into engagement with the flesh side of a mink pelt.

10 The third embodiment shown in Fig. 3 is a scraping roller 1 for being arranged on a hub part of the scraping apparatus which is provided with a plurality of axial splines on the outer surface which cooperates with corresponding axial splines on the inner side of the central axial roller hole 10 of the scraping roller 1 so as to establish a torque transmitting connection between the scraping roller 1 and the hub. Such type
15 of scraping roller 1 is shown in Danish patent DK 177 580 B1 without the core part 2 of a hard plastic.

The scraping rollers 1 of the three embodiments are manufactured by injection moulding of the core part 2 followed by an injection moulding of the outer layer 3 on
20 core part 2, covering the core part 2 partially at the teeth 8 only or completely except for the ends of the scraping roller 1 as shown in the embodiments of the figures. The outer layer 3 is made from thermoplastic polyurethane with a relatively low hardness of preferably Shore 82A to 84A.

25 The hard core part 2 of the scraping roller 1 has the further advantage of allowing a simple replacement of scraping rollers 1 on a scraping apparatus since the risk of deforming the scraping roller due to an excessive tightening pressure on the end surfaces of the scraping roller 1 is negligible as compared to traditional scraping rollers 1 made from one elastic material.

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LIST OF REFERENCE NUMERALS

| | | |
|----|----|-----------------------|
| | 1 | Scraping roller |
| | 2 | Core part |
| | 3 | Outer layer |
| 5 | 4 | Scraping edge |
| | 5 | Axial opening |
| | 6 | Drive openings |
| | 7 | Cavities in core part |
| | 8 | Scraping teeth |
| 10 | 9 | Core extensions |
| | 10 | Axial roller hole |

Patentkrav

- 5 1. Skraberulle (1) til at skrabe kødsiden af en dyrepels, hvilken skraberulle omfatter en flerhed af tænder (8), der hver især har en skrabekant (4), hvor skraberullen omfatter en keredel (2) og et udvendigt lag (3), i hvilket skraberkanterne (4) er dannet, hvor det udvendige lag er fremstillet af et plastmateriale med en hårdhed i området fra Shore 60A til Shore 95A, og keredelen (2) er fremstillet af et plastmateriale med en hårdhed på mindst Rockwell 60R, og hvor det udvendige lag (3) klæber til keredelen (2) ved grænseflader mellem det udvendige lag (2) og keredelen (3).
- 10 2. Skraberulle (1) ifølge krav 1, hvor det udvendige lags plastmateriale er polyurethan, fortrinsvis termoplastisk polyurethan.
- 15 3. Skraberulle (1) ifølge et af de foregående krav, hvor det udvendige lags materiales hårdhed ligger i området fra Shore 78A til Shore 88A, fortrinsvis i området fra Shore 82A til Shore 84A.
- 20 4. Skraberulle (1) ifølge et af de foregående krav, hvor det udvendige lags materialetykkelse ved skraberkanterne (4) ligger i området 3 til 25 millimeter.
- 25 5. Skraberulle (1) ifølge et af de foregående krav, hvor keredelen (2) omfatter kerneforlængelser (9) ind i tænderne (8), hvor kerneforlængelserne (9) fortrinsvis strækker sig i området 8 til 20 millimeter fra en cylindrisk basisdel af keredelen (2).
- 30 6. Skraberulle (1) ifølge et af de foregående krav, hvor keredelen (2) er fremstillet af et fiberforstærket plastmateriale.
7. Skraberulle (1) ifølge krav 6, hvor plastmaterialet er forstærket med fra 10 til 40 volumen-% fibre, fortrinsvis fra 25 til 35 volumen-%.
8. Skraberulle (1) ifølge krav 6 eller 7, hvor fibre er glasfibre.

9. Skraberulle (1) ifølge et af de foregående krav, hvor keredelen (2) er fremstillet af et plastmateriale med en hårdhed på mindst Rockwell 75R, fortrinsvis mindst Rockwell 90R.
- 5 10. Skraberulle (1) ifølge krav 9, hvor keredelen (2) er fremstillet af polyamid, fortrinsvis alifatisk polyamid.
- 10 11. Skraberulle (1) ifølge et af de foregående krav, hvor keredelen (2) omfatter en flerhed af hule kaviteter (7), hvilke kaviteter (8) fortrinsvis strækker sig i en langsgående retning af skraberullen (1).
12. Anvendelse af en skraberulle (1) ifølge et af de foregående krav til at skrabe kødsiden af en pels, fortrinsvis en minkpels.

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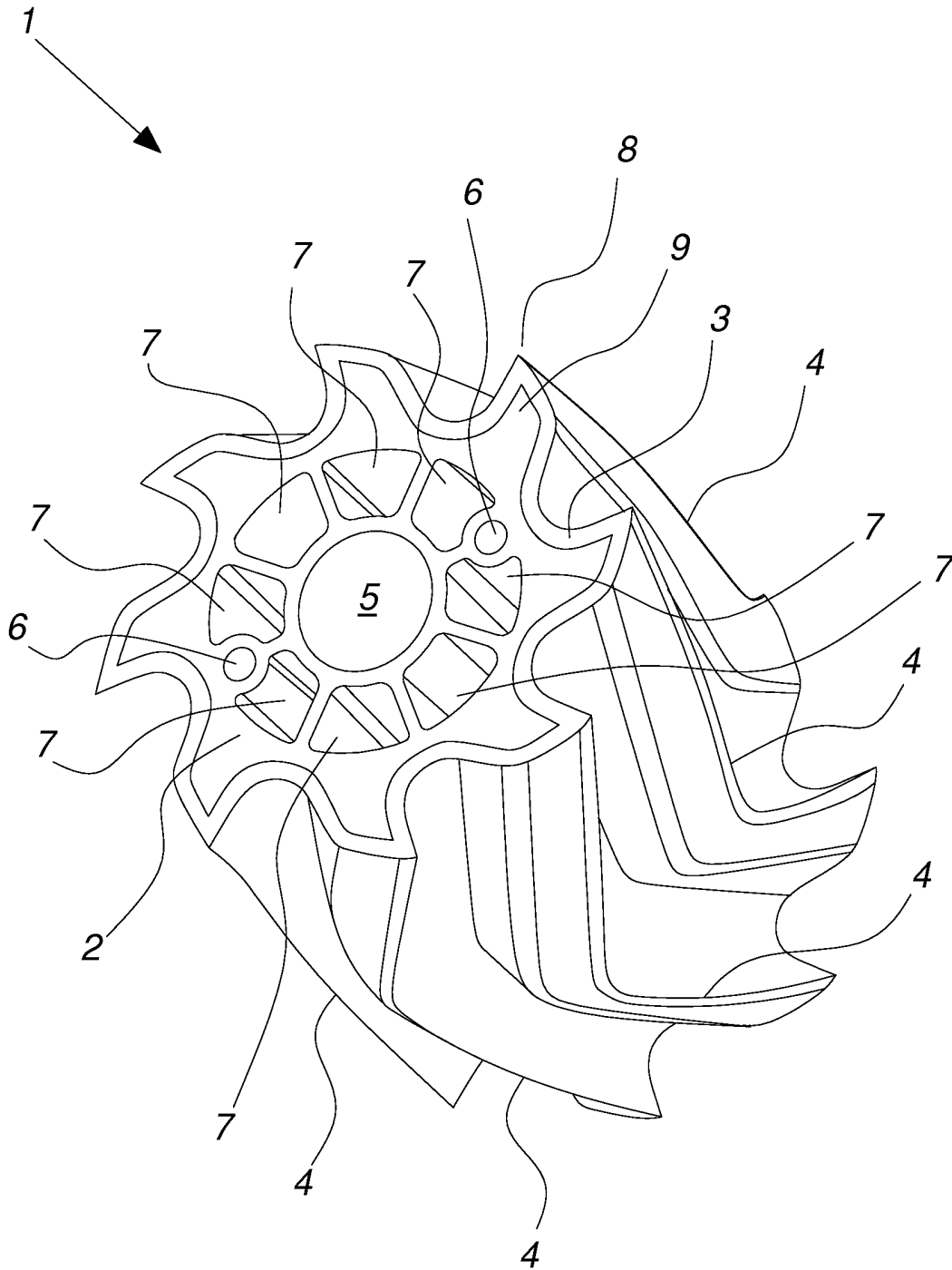


Fig. 1

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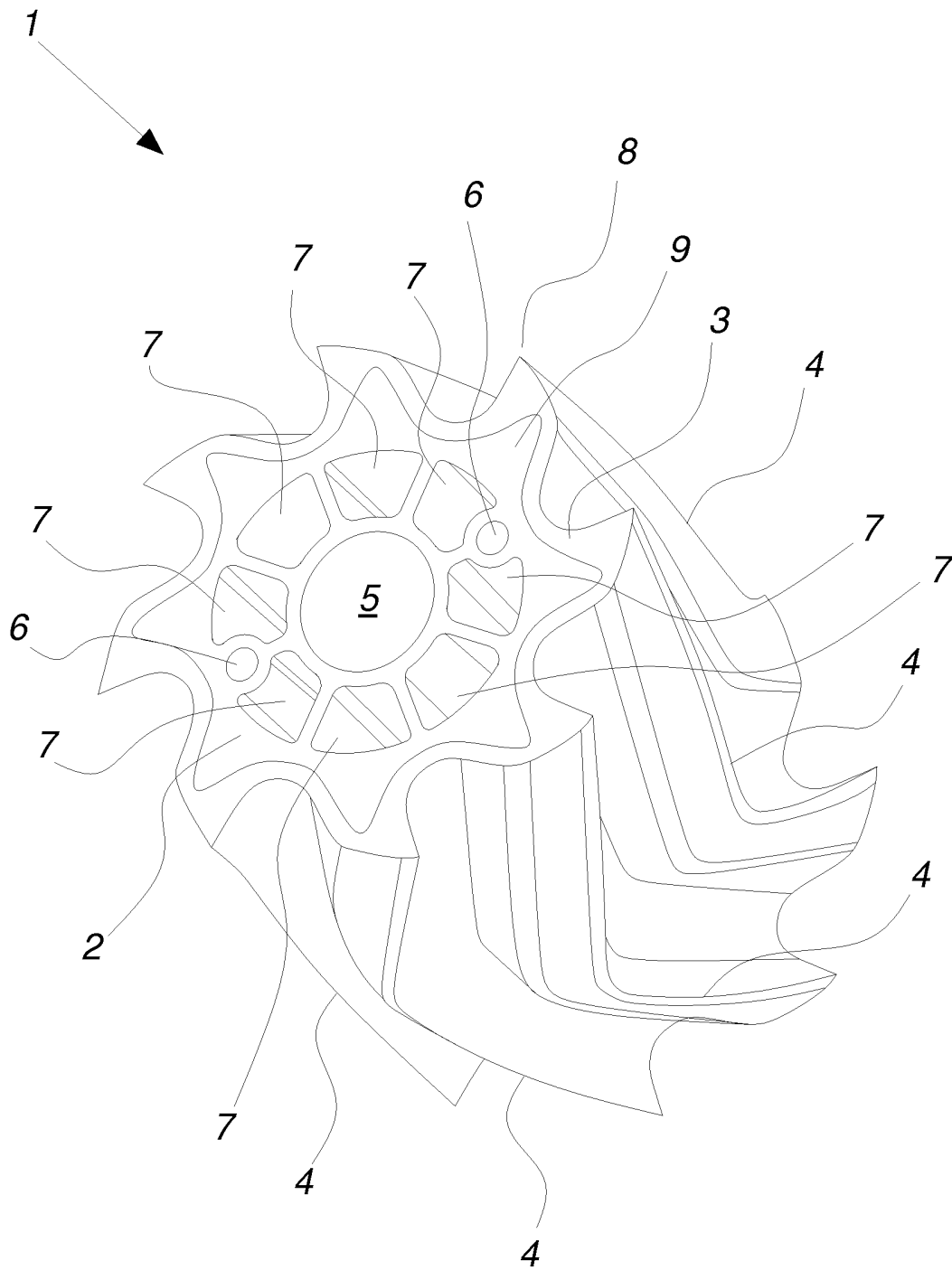


Fig. 2

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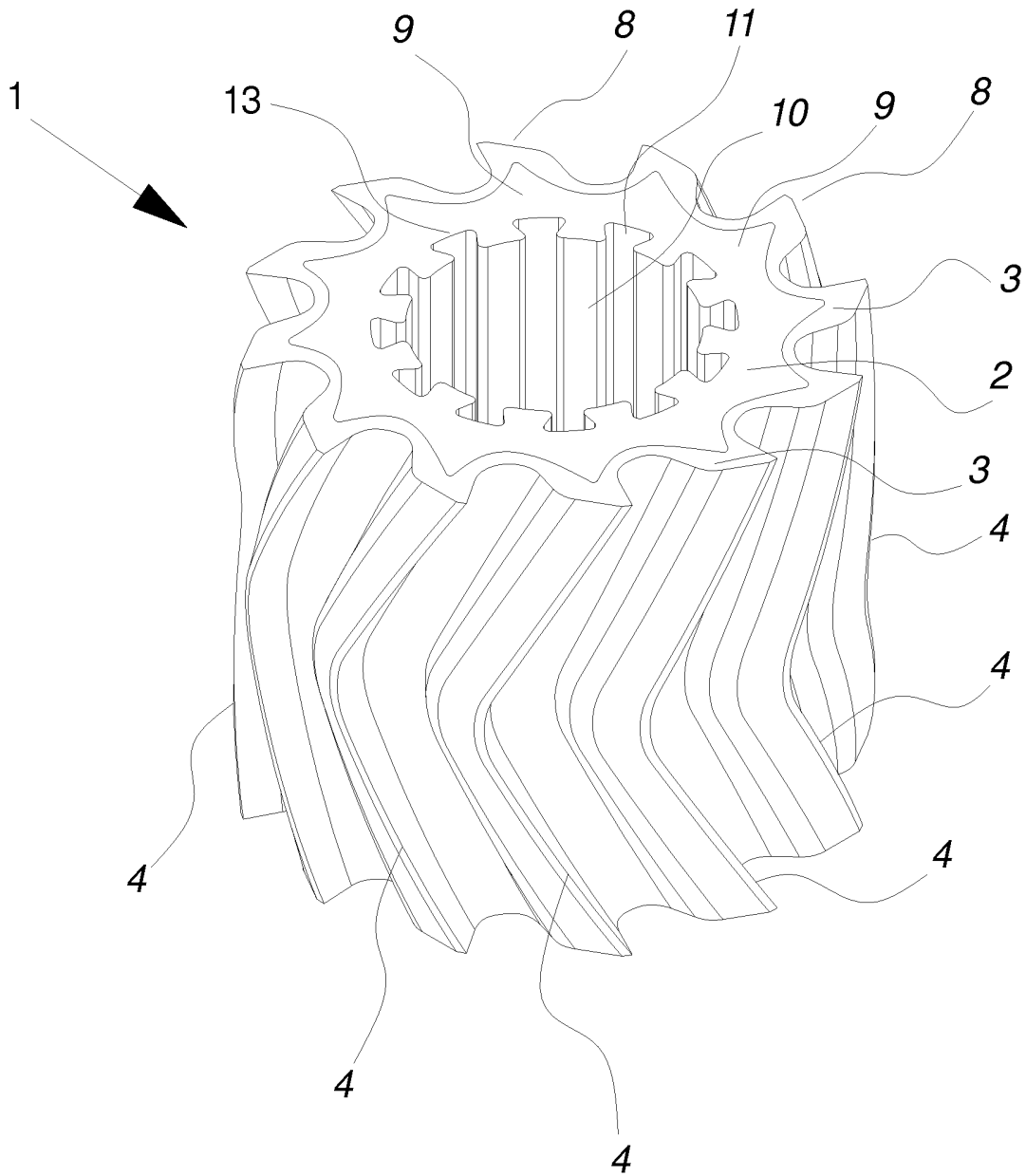


Fig. 3