Claims

1. A disc-shaped separating tool, for rotating (D) cutting of an elongated, stationarily clamped workpiece, at exclusively radial feed (VR) of the separating tool in relation to its rotation axis at least roughly in the direction of the clamped workpiece, with geometrically undetermined separating blades (5) in a radially outer circumferential area (3) of the separating tool,
two opposing disc flanks (4) in a radially inner area in relation to the circumferential area (3), and with an axial attachment opening (7) on the radial inside,
characterised in that
the separating tool is formed as a separating-grinding-polishing disc (1), specifically
for rotating (D) cutting of the workpiece clamped at least roughly orthogonally to the radial feed (VR) along its rotation axis via the separating blades (5) radially arranged on the outside, and
for rotating grinding, with the disc flanks (4) being at least partly applied with grinding media and optionally also with polishing media (6, 20, 21, 22).

2. The disc-shaped separating tool in accordance with claim 1,
characterised in that it has a defined flexibility and a defined imbalance.

3. The disc-shaped separating tool in accordance with claims 1 or 2, characterised in that it has a disc-shaped basic body (2) made of a composite material, e.g. using a synthetic resin matrix, or of a composite

material that already contains separating agent of a defined grain.

4. The disc-shaped separating tool in accordance with one of the preceding claims,
characterised by at least one area with the separating blades (5), acting in the radial working direction (VR), and at least one grinding area acting in the axial working direction (VA), and optionally also a polishing area (6), wherein preferably wearing binding materials of the grinding grains responsible for separation are used as separating blades (5), and wherein its radial wear generally is possible up to the tool holder of an operating machine.

5. The disc-shaped separating tool in accordance with one of the preceding claims,
characterised in that the grinding media and optionally also the polishing media (6) are made of geometrically undetermined blades, wherein the grinding media and optionally also the polishing media (6) have a finer grain or serration or are designed for a lower material removal than the separating media (5) and/or that at least one of the two disc flanks (4) is thickened in one or multiple steps as compared to the material thickness in the radially outer circumferential area (3) from the radial outside to the radial inside, in particular by way of the grinding media and optionally also the polishing media (6).

6. The disc-shaped separating tool in accordance with one of the preceding claims,
characterised in that, from the radial outside to the radial inside, initially grinding areas and, at least increasingly towards the radial inside or eventually

exclusively at the radial inside, polishing areas on at least one of the disc flanks (4), are arranged.

7. The disc-shaped separating tool in accordance with one of the preceding claims,
characterised in that different geometrically undetermined tool blades and/or materials of different grains are arranged in the circumferential area (3) and on at least one of the disc flanks (4), in particular with increasingly fine grinding and polishing materials towards the disc centre.

8. The disc-shaped separating tool in accordance with one of the preceding claims,
characterised in it that there is at least one wear display (41 to 44).

9. The disc-shaped separating tool in accordance with claim 8,
characterised in that the wear display (41 to 44) reacts independently to mechanical wear of the separating tool, in particular by a different colour appearing or becoming evident, particularly preferably detectable in the radial and axial directions each.

10. A radial separating method for processing axially elongated workpieces by way of a disc-shaped separating tool with geometrically undetermined separating blades (5),
characterised in that it is performed with a disc-shaped separating tool in accordance with one of claims 1 to 9 and that a clamped workpiece is cut and/or polished during a single strictly radial feed movement of the separating tool, and, optionally, wherein a lateral deflection of the axially stationarily rotating

separating tool brings this into grinding and/or polishing axial active contact with the workpiece to be processed at least with one laterally attached grinding and polishing surface (6, 20, 21, 22).

11. The radial separating method in accordance with claim 10,
characterised in that the lateral deflection of the rotating separating tools is achieved by a flexibility and a defined imbalance of the separating tool, wherein combined geometrical and kinematic properties of the separating tool lead to a lateral deflection of the separating tool as soon as the separating tool rotating at working speed touches a workpiece with its outer circumference (3) or its separating blade (5) in the radial feed direction (VR).

12. The radial separating method in accordance with claim 11, characterised in that the total lateral deflection is about 10 percent of the width of the separating-grinding-polishing disc (1).

13. The radial separating method in accordance with one of claims 10 to 12,
characterised in that the operating revolutions of the separating-grinding-polishing disc (1) has a value that corresponds to a multiple of one of the natural frequencies of the separating-grinding-polishing disc (1).

14. The radial separating method in accordance with claims 10 to 13, characterised in that a thickening of the disc flanks (4) supports the axial interlock of the at least one grinding and polishing medium (6, 20, 21, 22).

15. The radial separating method in accordance with one of claims 10 to 14,
characterised in that a wear display (41 to 44) displays a remaining residual usage capacity, in particular a remaining cutting volume and/or a remaining usage time.

16. The radial separating method in accordance with claim 15, characterised in that the wear display reacts independently to mechanical wear of the tool, in particular by a different colour appearing or becoming evident.