



(22) Date de dépôt/Filing Date: 2001/05/16

(41) Mise à la disp. pub./Open to Public Insp.: 2002/01/06

(45) Date de délivrance/Issue Date: 2009/09/15

(30) Priorité/Priority: 2000/07/06 (DE100 33101.7)

(51) Cl.Int./Int.Cl. *B28D 1/24* (2006.01),
B23D 61/02 (2006.01), *B28D 1/12* (2006.01)

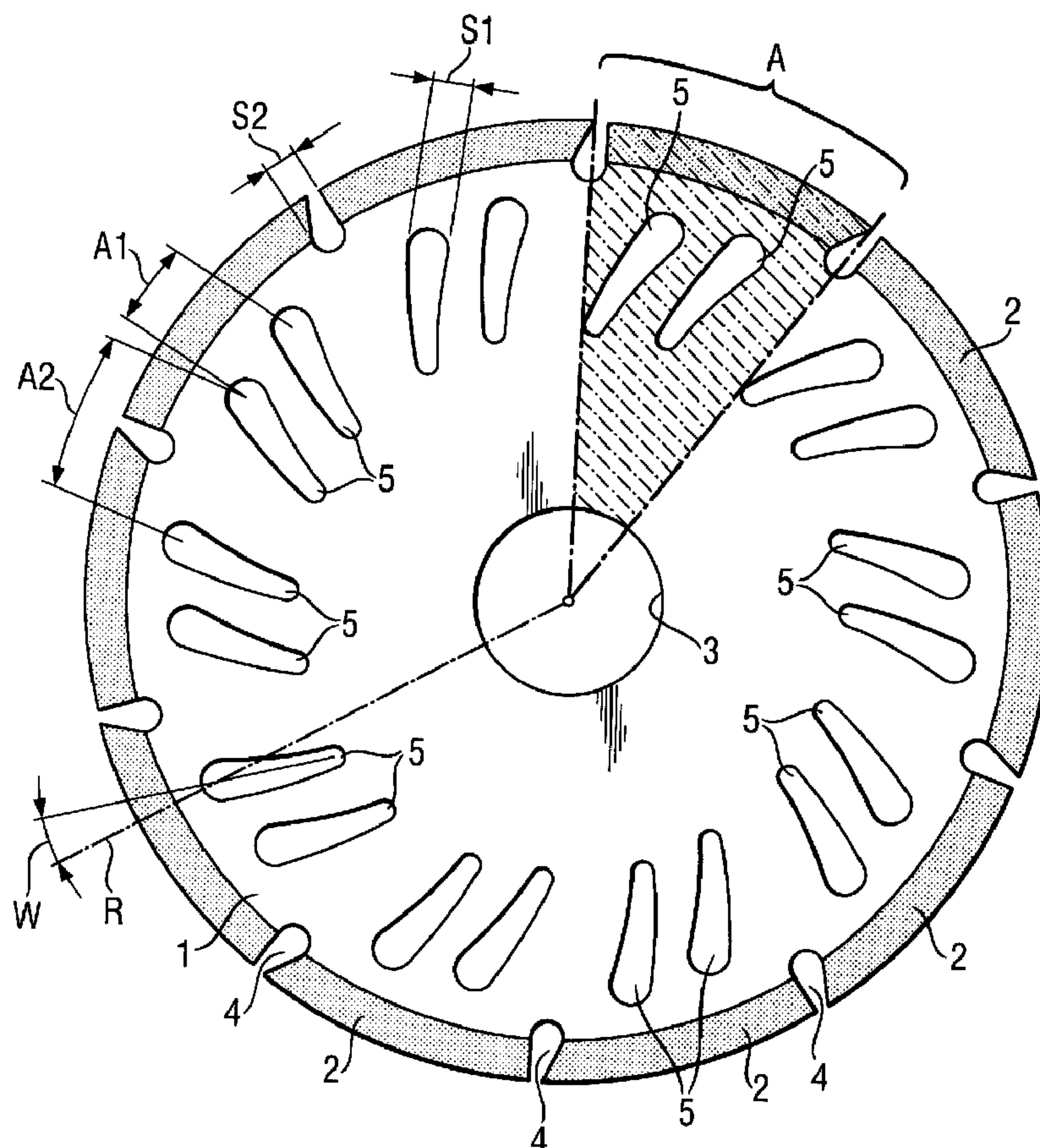
(72) Inventeur/Inventor:
SPANGENBERG, ROLF, DE

(73) Propriétaire/Owner:
HILTI AKTIENGESELLSCHAFT, LI

(74) Agent: GIERCZAK, EUGENE J. A.

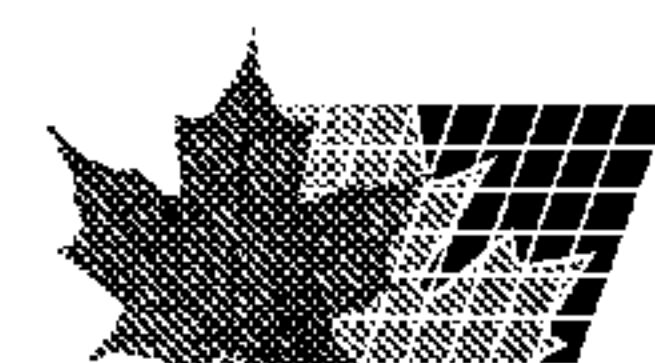
(54) Titre : OUTIL A TRONCONNER EN FORME DE DISQUE

(54) Title: DISC-SHAPED PARTING TOOL



(57) Abrégé/Abstract:

A parting tool, including a disc-shaped base member, a plurality of ring segment-shaped cutting regions provided at a circumference of the base member separated circumferentially by recesses open at an outer contour of the base member and



(57) **Abrégé(suite)/Abstract(continued):**

extending radially through respective cutting regions, and at least one elongate opening located in a section of the base member, which is limited by two adjacent recesses and the central bore of the base member, and extending radially along a section of a spiral line starting from a center of the base member.

ABSTRACT OF THE DISCLOSURE

A parting tool, including a disc-shaped base member, a plurality of ring segment-shaped cutting regions provided at a circumference of the base member separated circumferentially by recesses open at an outer contour of the base member and extending radially through respective cutting regions, and at least one elongate opening located in a section of the base member, which is limited by two adjacent recesses and the central bore of the base member, and extending radially along a section of a spiral line starting from a center of the base member.

10

FIELD OF THE INVENTION

The present invention relates to a parting tool including a disc-shaped base member having a central bore, a plurality of ring segment-shaped cutting regions provided at a circumference of the base member and separated circumferentially by recesses open at an outer contour of the base member and extending radially through respective cutting regions, and at least one elongate opening located in a section of the base member which is limited by two adjacent recesses and the central bore.

20

BACKGROUND OF THE INVENTION

For forming slots in a constructional component in which concealed conduits can be buried, masonry slotting tools which have at least two spaced from each other, disc-shaped parting tools, are used. The spacing between the two parting tools depends on the width of a to-be-formed slot. The two parting tools form two, spaced from each other, slots in a constructional component. Then, the web, which remains between the two slots is removed from the constructional component by a suitable break-out tool, and a channel, in which at least one concealed conduit can be laid in, is formed.

30

A disc-shaped parting tool for use in masonry slotting power tool is disclosed in German publication DE42 43 480. The disclosed disc-shaped parting tool has a disc-shaped base member having a central bore that provides for mounting of the parting tool on a receiving flange of a masonry slotting power tool.

The base member has, at its circumference, a plurality of circular cutting regions separated by recesses which are open at the out contour of the base member.

10

In addition to the separating recesses, the base member has a plurality of radially extending elongate openings. Each elongate opening is located in a section which is limited by two adjacent separating recesses and the central bore.

20

During cutting of mineral constructional components with the use of a so-called dry cutting process, the cutting regions are subjected to high temperatures and to formation of a large amount of cuttings. The removal of the cuttings is effected upon rotation of a parting tool in a direction opposite to the cutting direction, by a surrounding air that flows through the elongate openings which are formed in the space between the cutting regions and the central bore. When a particular large amount of cuttings is formed, the cuttings cannot be removed sufficiently rapidly from the intermediate space between two parting tools as a sufficiently high circulation of air through the elongate openings cannot be obtained. The reason for this is a large circumferential distance between separate elongate openings.

With an increased amount of cuttings, the cutting region heats up to a very large degree. The reduced air circulation leads to a thermal overstress and damage of the parting tool.

Accordingly, an object of the present invention is to provide a disc-shaped parting tool which would insure a good and reliable removal of cuttings without a thermal overstress of the parting tool.

BRIEF SUMMARY OF THE INVENTION

30

This and other objects of the present invention which will become apparent hereinafter, are achieved by providing in each section of the base member, which is limited by two adjacent separating recesses and the central bore, at least one elongate opening extending radially along a section of a spiral line which starts from the center of the base member.

10

In accordance with the present invention, the elongate openings extend not only radially but also in the circumferential direction, forming, in the circumferential direction, closely following each other, air entry regions through which air can be fed in the intermediate space formed by two parting tools in large amounts. The large amount of air, which is fed to remove the cuttings, also insure a very good cooling of the parting tools.

20

A particularly good air circulation and removal of cuttings from the intermediate space, which is formed by two, spaced from each other, disc-shaped parting tools, is advantageously achieved when a tangent to a central region of a longitudinal extent of an elongate opening forms with the radius of the base member an angle from 7° to 15° . A particular good removal characteristics are achieved with the angle, which is formed by the tangent and the radius, being equal 11° .

An increased feeding of the air in the vicinity of the cutting region and, thus, a good cooling of the parting tool is advantageously achieved when the width of the elongate openings, measured transverse to its longitudinal extent, increases toward the outer contour of the base member.

30

Preferably, in at least one section of the base member, which is limited by two separating recesses and the central bore, two elongate openings are provided. This further increases the amount of air entering the intermediate space between the two parting tools. This further contributes to an increased removal of cuttings and cooling of the parting tool. For manufacturing reasons, the two elongate openings are formed substantially with the same size.

In order to be able to achieve a very good air circulation, advantageously, a circumferential distance between the two elongate openings located in the same section of the base member is smaller than a circumferential distance between two adjacent elongate openings of two adjacent base member section.

20

The elongate openings can also so be formed that, while being separate from each other, they overlap each other in the circumferential direction of the base member.

30

Single figures of the drawings shows a rear view of a parting tool according to the present invention.

10

DESCRIPTION OF A SPECIFIC EMBODIMENT

20

A disc-shaped parting tool according to the present invention, which is shown in the drawing, has a base member 1 with a central bore 3. The thickness of the base member 1 amounts to from 1mm to 3mm. A plurality of ring segment-shaped cutting regions 2 are formed at the circumference of the base member 1. The circumferentially arranged, ring segment-shaped, cutting regions 2 are separated from each other by recesses 4. The recesses 4 extend radially through respective cutting regions and are open toward the outer contour of the base member 1. The width S2 of recesses 4, which is measured parallel to the circumferential direction of the base member 1, increases in a direction toward the central bore 3, with the bottom of the recesses 4 having a semicircular shape.

Two, equal size, elongate openings 5 are provided in each of the sections of the base member 1 which is limited by respective two recesses 4 and the central bore 3. The two openings 5 are arranged adjacent to each other in the circumferential direction. Both end regions of each elongate opening 5 have each a semicircular profile. The width S1 of each elongate opening 5 increases toward the outer contour of the base member 1. Each elongate opening 5 extends along a section of a spiral-shaped line extending from the center of the base member 1 and is arranged at an angle of 11° relative to a radius R of the base member 1.

10 A distance A1 between two elongate openings 5 located in a section A is smaller than the distance A2 between two adjacent elongate openings 5 of adjacent sections A.

 Though the present invention was shown and described with references to the preferred embodiment, such are merely illustrative of the present invention and are not to be construed as a limitation thereof, and various modifications of the present invention and are not to be construed as a limitation thereof, and various modifications of the present invention will be apparent to those skilled in the art. It is, therefore, not intended that the present invention be limited to the disclosed embodiment or details thereof, and the present invention includes all variations
20 and/or alternative embodiments within the spirit and the scope of the present invention as defined by the appended claims.

CLAIMS

1. A parting tool, comprising a disc-shaped base member having a central bore; a plurality of ring segment-shaped cutting regions provided at a circumference of the base member and extending radially through respective cutting regions; and at least one
5 elongate opening located in each section of the base member, which is limited by two adjacent recesses and the central bore, and extending radially along a section of a spiral line starting from a center of the base member; wherein a tangent to a central region of a longitudinal extent of the elongate opening forms with a radius of the base member an angle from 7° to 15°.
- 10 2. A parting tool according to claim 1, wherein a width of the elongate opening measured transverse to a longitudinal extent of the elongate opening increases toward the outer contour of the base member.
3. A parting tool according to claim 1, wherein at least one further elongate opening substantially identical to the at least one elongate opening is located in each section of
15 the base member which is limited by two adjacent recesses and the central bore.
4. A parting tool according to claim 3, wherein both elongate openings have the same size.
5. A parting tool according to claim 3, wherein circumferential distance between the two elongate openings located in a same section is smaller than a circumferential
20 distance between two adjacent elongate openings of two adjacent sections.

6. A parting tool according to claim 1, wherein each of the recesses has a circumferential width that increases toward the central bore.

7. A cutting tool, comprising a disc-shaped based member having a central bore and a plurality of segment-shaped cutting regions provided at a circumference of the base member and separated from each other in a circumferential direction by recesses which are open toward an outer contour of the base member and extend radially through respective cutting regions, each segment-shaped cutting region defining a section of the base member which is limited by two imaginary lines extending from a center of the base member and passing through recesses that separate the section defining cutting region from adjacent cutting regions; and at least one elongate opening located in each section and extending radially along a section of an imaginary spiral line extending from the center of the base member, wherein a tangent to a central region of the section of the imaginary spiral line, along which the elongate opening extends, forms with a radius of the base member an angle from 7° to 15°.

8. A cutting tool according to claim 7, wherein a width of the elongate opening measured transverse to a longitudinal extent of the elongate opening increases toward the outer contour of the base member.

9. A cutting tool according to claim 7, wherein at least one further elongate opening substantially identical to the at least one elongate opening is located in each section of the base member.

10. A cutting tool according to claim 9, wherein both elongate openings have the same size.

11. A cutting tool according to claim 9, wherein circumferential distance between the two elongate openings located in a same section is smaller than a circumferential distance between two adjacent elongate openings of two adjacent sections.

12. A cutting tool according to claim 7, wherein each of the recesses has a circumferential width that increases toward the central bore.

