is enhanced. Then, even if the cemented carbide core is used, chipping and/or bowing can occur, adversely affecting the machined state.

One solution to the above problem is to add a lubricant such as fatty acid to grinding fluid or coolant. However, since the space between the saw blade and the workpiece or rare earth magnet is extremely narrow, it is difficult to effectively supply the coolant between the saw blade and the magnet.

Citation List

Patent Document 1: JP-A H10-175172

DISCLOSURE OF INVENTION

~~An object~~Embodiments of the invention ~~is~~seek to provide a saw blade in the form of a resinoid wheel, which is used in multiple sawing of a rare earth magnet block into multiple pieces, which may reduce~~s~~ the sawing resistance between the saw blade and the magnet block, and which may ensure~~s~~ sawing at a high accuracy and high speed even if the saw blade is thinner than the conventional blades. ~~Another object is~~Embodiments of the invention also seek to provide a method for sawing a rare earth magnet block into multiple pieces.

Embodiments of t~~T~~he invention pertain~~s~~ to a multiple blade assembly comprising a plurality of saw blades coaxially mounted on a rotating shaft at axially spaced apart positions. The multiple blade assembly is used for sawing a rare earth magnet block into multiple pieces by rotating the plurality of saw blades. The saw blade has a core in the form of a thin disk or thin doughnut disk and a peripheral cutting part on an outer peripheral rim of the core. The inventors have developed a saw blade in the form of a resinoid wheel having a cutting part made of a composition comprising a component or lubricant for reducing the friction between the cutting

part and the magnet block during the sawing operation. When the magnet block is sawed by the saw blades, the sawing operation experiences a reduced cutting resistance, and achieves an equivalent yield and accuracy compared with the prior art even if thinner saw blades are used.

An aspect of ~~The~~the present invention ~~generally pertains to~~provides a multiple blade assembly comprising a plurality of saw blades coaxially mounted on a rotating shaft at axially spaced apart positions, which is used for sawing a rare earth magnet block into multiple pieces by rotating the plurality of saw blades. ~~In one aspect, the invention provides t~~The saw blade ~~comprising~~comprises a core in the form of a thin disk or thin doughnut disk and a peripheral cutting part on an outer peripheral rim of the core, the cutting part being made of a composition comprising an abrasive, a resin binder, and a lubricant for reducing the friction between the cutting part and the magnet block during the sawing operation~~,~~. ~~In a preferred embodiment,~~ the lubricant ~~is~~being selected from the group consisting of boron nitride, ~~carbon,~~ molybdenum disulfide, tungsten disulfide~~,~~ and graphite fluoride, ~~and polytetrafluoroethylene,~~ and mixtures thereof~~.~~, ~~Also preferably,~~and the lubricant ~~is~~being in particulate form having a particle size in the range of 1 to 200 μm.

Typically, the cutting part is made of a composition comprising 10 to 40% by weight of diamond and/or CBN as the abrasive; 20 to 60% by weight of a matrix selected from the group consisting of SiC having a particle size of 1 to 100 μm, SiO_2 having a particle size of 1 to 100 μm, Al_2O_3 having a particle size of 1 to 100 μm, WC having a particle size of 0.1 to 50 μm, Fe, Ni and Cu having a particle size of 1 to 200 μm, and mixtures thereof; 10 to 50% by weight of a

thermosetting resin as the binder; and 1 to 50% by weight of the lubricant.

~~In another aspect~~As disclosed, the invention provides a method for sawing a rare earth magnet block into multiple pieces, comprising the steps of providing a multiple blade assembly comprising a plurality of the above-defined saw blades coaxially mounted on a rotating shaft at axially spaced apart positions, and rotating the plurality of saw blades.

ADVANTAGEOUS EFFECTS OF INVENTION

The saw blades in the form of a resinoid wheel are used in multiple sawing of a rare earth magnet block into multiple pieces. As compared with the prior art, the saw blade reduces the cutting resistance, improves the sawing accuracy, and ensures sawing at a high accuracy and high speed even if the saw blade is thinner than the conventional blades. The blade is of great worth in the industry.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 illustrates a multiple blade assembly in one embodiment of the invention, FIG. 1a being a perspective view and FIG. 1b being a cross-sectional view.

FIG. 2 is an enlarged cross-sectional view of a peripheral portion of the saw blade.

DESCRIPTION OF EMBODIMENTS

The term "axial" refers to the axis of a rotating shaft and "radial" refers to a circular blade in an assembly. The width of the cutting part corresponds to an axial size in this sense.

A multiple blade assembly is constructed by coaxially mounting a plurality of saw blades on a rotating shaft at axially spaced apart positions (as shown in FIG. 1). The