

## Title (en)

Dispersing machine and its use in manufacturing powder mixtures

## Title (de)

Dispergiemaschine und deren Verwendung für die Herstellung von Pulvermischungen

## Title (fr)

Machine de dispersion et son utilisation pour la fabrication de mélanges de poudres

## Publication

**EP 1900422 A1 20080319 (DE)**

## Application

**EP 07017711 A 20070911**

## Priority

DE 102006043498 A 20060912

## Abstract (en)

The dispersing machine for the production and homogenization of tungsten carbide- or cermet powder mixture, comprises rotor- and stator elements, which are formed such that a gap volume is present between them in operating position. A shear force is bringable in the gap volume through relative contrary movement of the rotor- and stator mantle surfaces. The rotor (12) and stator (14) consist of a sintered tungsten carbide. The tungsten carbide parts of the machine are formed from separated manufactured support and present in a tungsten carbide-steel-bonding material. The dispersing machine for the production and homogenization of tungsten carbide- or cermet powder mixture, comprises rotor- and stator elements, which are formed such that a gap volume is present between them in operating position. A shear force is bringable in the gap volume through relative contrary movement of the rotor- and stator mantle surfaces. The rotor (12) and stator (14) consist of a sintered tungsten carbide. The tungsten carbide parts of the machine are formed from separated manufactured support and present in a tungsten carbide-steel-bonding material. The machine part surfaces are powder-coated with tungsten carbide. The mantle surfaces pointing to an operating volume (16) of rotor and/or stator are provided with grooves or channels. A rotor head (12A) provided with a suspension-guiding surface structuring or guidance mechanism is detachably fastened outside of the operating volume to the rotor. The operating volume in suspension flow direction is formed between the rotor and the stator and narrows itself in constant monotonously manner. The smallest distance between the rotor and the stator at the operating volume is 0.1 mm. A conical annular gap is formed as gap volume between the rotor and the stator. The height or length of the operating volume in the direction of flow, is 1-3 times equal to the smallest diameter of the rotor. The length-diameter-ratio is  $\geq 3$  than the quotient from effective rotor length and smallest effective rotor diameter. A return line from the discharge is present to the inlet of the rotor-stator-unit or into a preliminarily container for the recirculation of the homogenized suspension. An agitator for slurring of suspensions is present in the preliminarily container.

## Abstract (de)

Die Dispergiemaschine (Homogenisierungsmühle) dient der Herstellung und Homogenisierung von Pulversuspensionen in Mahl- oder Dispergiertflüssigkeiten und besitzt im Wesentlichen ein gegengleich ausgebildetes Rotor- und Statorelement-Paar, das so geformt ist, dass sich in Arbeitsposition dazwischen ein freier konischer Spalt befindet, der durch Rotation ein entsprechendes Volumen bildet, das Arbeitsvolumen, in dem durch schnelle Rotordrehungen Scherkräfte eingebracht werden, wobei die von der Suspension durchströmte Länge des Arbeitsvolumens in Fließrichtung 1- bis 5mal dem Einlauf- bzw. Kopfdurchmesser des Rotors entspricht. Die Bauelemente Rotor und Stator sind von einfacher geometrischer Form, daher gut nachschleifbar und bestehen aus Hartmetall oder einem Hartmetall-Stahl-Verbund, während die durchströmten Maschinenbauteile innen mit einer Hartmetallbeschichtung versehen sind. Die Dispergiemaschine arbeitet vollständig ohne freibewegliche Mahlkörper. Durch die langgestreckte Form und die Beschichtung ist die Dispergiemaschine für die effektive Herstellung von homogenen Suspensionen in der Hartmetall- und Cermetherstellung besonders geeignet.

## IPC 8 full level

**B01F 7/00** (2006.01); **B01F 3/12** (2006.01); **B01F 13/10** (2006.01); **B02C 2/10** (2006.01); **B22F 9/04** (2006.01); **C22C 29/00** (2006.01)

## CPC (source: EP)

**B01F 23/53** (2022.01); **B01F 27/053** (2022.01); **B01F 27/272** (2022.01); **B01F 27/2722** (2022.01); **B01F 27/2723** (2022.01); **B01F 27/2724** (2022.01); **B02C 2/005** (2013.01); **B02C 2/10** (2013.01); **C22C 29/00** (2013.01); **B22F 2009/045** (2013.01)

## Citation (search report)

- [A] DE 102004053221 B3 20060202 - ZSCHIMMER & SCHWARZ GMBH & CO [DE]
- [A] DE 2314768 A1 19741003 - SUPRATON AUER & ZUCKER
- [A] GB 1006301 A 19650929 - BUSCHMAN PRODUCTS INC
- [A] US 2004167230 A1 20040826 - CHIEN WEI-YI [TW], et al
- [A] GB 862923 A 19610315 - WOLFEN FILMFAB VEB
- [A] WO 9847621 A2 19981029 - YALESTOWN CORP NV [NL], et al

## Cited by

CN113458123A; CN112717795A; CN110051872A; CN113231132A; CN108405870A; CN114832762A; US11666871B2; US9174218B2; WO2017117682A1; WO2010099767A1

## Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

## Designated extension state (EPC)

AL BA HR MK YU

## DOCDB simple family (publication)

**EP 1900422 A1 20080319**; DE 102006043498 A1 20080327

## DOCDB simple family (application)

**EP 07017711 A 20070911**; DE 102006043498 A 20060912