(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 151 364 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
13.11.2024 Bulletin 2024/46

(21) Application number: **21804106.9**

(22) Date of filing: **13.05.2021**

(51) International Patent Classification (IPC):
B24D 7/10 *(2006.01)* ***B24D 5/10*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B24B 55/02; B24D 3/001; B24D 5/10; B24D 7/10

(86) International application number:
PCT/CN2021/093493

(87) International publication number:
WO 2021/228170 (18.11.2021 Gazette 2021/46)

(54) **SPECIAL-SHAPED WHEEL HAVING POSITIVE CORRELATION WATER PASSING STRUCTURE FOR FULL-GRINDING SURFACE**

SPEZIELL GEFORMTE RÄDER MIT POSITIVER KORRELATIONSWASSERDURCHGANGSSTRUKTUR FÜR VOLLSCHLEIFENFLÄCHE

ROUE DE FORME SPÉCIALE AYANT UNE STRUCTURE DE PASSAGE D'EAU À CORRÉLATION POSITIVE POUR UNE SURFACE DE MEULAGE COMPLET

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **15.05.2020 CN 202010414824**
15.05.2020 CN 202020813772 U

(43) Date of publication of application:
22.03.2023 Bulletin 2023/12

(73) Proprietor: **Guilin Champion Union Diamond Co., Ltd.**
Guilin, Guangxi 541004 (CN)

(72) Inventors:
- **SONG, Jingxin**
  Guilin, Guangxi 541004 (CN)
- **YE, Yong**
  Guilin, Guangxi 541004 (CN)
- **LONG, Huiling**
  Guilin, Guangxi 541004 (CN)
- **GUO, Xinling**
  Guilin, Guangxi 541004 (CN)
- **LIANG, Anning**
  Guilin, Guangxi 541004 (CN)
- **WANG, Zhiyong**
  Guilin, Guangxi 541004 (CN)
- **LIU, Renjie**
  Guilin, Guangxi 541004 (CN)
- **QIN, Fengming**
  Guilin, Guangxi 541004 (CN)

(74) Representative: **Zaboliene, Reda**
Metida
Business center Vertas
Gyneju str. 16
01109 Vilnius (LT)

(56) References cited:
WO-A1-2019/174580
CN-A- 110 948 404
CN-A- 111 590 476
CN-U- 206 732 729
CN-U- 212 218 224
JP-A- 2005 081 523
US-A- 3 683 566

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 4 151 364 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of abrasive wheel tools, and more particularly to a special-shaped wheel having a water passing structure positively correlated with a full grinding surface.

BACKGROUND

[0002] As shown in FIG. 1 and FIG. 2, several water passing holes 10 are circumferentially formed in a base of a special-shaped wheel (i.e., an abrasive wheel) in the prior art. As shown by a mark C in FIG. 2, cooling may be performed through the several water passing holes 10. However, due to the small number of water passing holes 10 and the limited water output, an internal cooling mode cannot be formed in an entire grinding process. As shown by a mark D in FIG. 2, the water passing holes 10 are generally formed in a circumference of an axial middle portion of a grinding region of the abrasive wheel and cannot axially cover the entire grinding region, and an axial length of each water passing hole 10 is smaller than an axial length of the grinding region. Thus, when a machining workpiece initially contacts the abrasive wheel or will be separated from the abrasive wheel, the machining workpiece cannot be cooled or can only be slightly cooled if a contact point is not in a region axially covered by the water passing holes 10. The water passing hole 10 generally is circular, such that the water flow at upper and lower ends of the abrasive wheel is relatively small. In an external cooling mode, it is very difficult to cool a small-diameter region of the abrasive wheel due to an adverse effect of a centrifugal force. Since an airflow barrier will be formed during high-speed rotation of the abrasive wheel, the high-speed grinding problem will be more severe under the action of the airflow barrier.

[0003] US 3 683 566 A shows an abrasive wheel comprising water passing grooves axially covering the entire grinding surface, communicating from an inner side of the base with the grinding surface. Furthermore, WO 2019/174580 discloses a grinding wheel's groove with a concave portion through which cooling water may flow, but not covering the entire axial grinding length. The arc length of each point in the axial direction of the grinding structure may be positively related to the processing amount at the point.

SUMMARY

[0004] In order to overcome the shortcomings in the prior art, the technical problem to be solved by the present invention is to provide a special-shaped wheel having a water passing structure positively correlated with a full grinding surface.

[0005] In order to solve the above technical problem, the technical solution of the present invention is as follows: a special-shaped wheel having a water passing structure positively correlated with a full grinding surface includes a base; a grinding layer is attached to an outer wall of the base, and an outer circumferential surface of the grinding layer is a grinding surface; a water inlet is formed in a top surface of the base, and a connection hole for connecting an external device is formed in a bottom surface of the base. The special-shaped wheel further includes a plurality of water passing grooves; the plurality of water passing grooves is densely formed around the base by taking a central axis of the base as an axis, communicates an inner side of the base with the grinding surface, and axially covers the entire grinding surface. That is, the axial height of an opening of the water passing groove covers the axial height of a grinded region of a machining workpiece, and the total length of accumulated circumferences of the corresponding water passing grooves at respective axial grinding points of the grinding surface is set in positive correlation with the grinding area of the grinding point.

[0006] The above-mentioned positive correlation refers to that a dependent variable increases along with the increase of an independent variable. In other words, an opening of the water passing groove at each axial point is in positive correlation with a machining allowance (the grinding area of this point). That is, the larger the machining allowance, the larger the opening of the water passing groove.

[0007] Based on the above technical solution, the present invention may further include the following improvements.

[0008] Further, the total length of the accumulated circumferences of the corresponding water passing grooves at the respective axial points of the grinding surface is $n \times Wi$, wherein i refers to the grinding point on the grinding surface, n refers to the number of water passing grooves, and Wi refers to an opening width of the corresponding water passing groove at the grinding point i.

[0009] The grinding area of the point i is set as S, such that the total length of accumulated circumferences ($n \times Wi$) is proportional to the grinding area S.

[0010] The present invention has the following beneficial effects.

1. Feed water enters from the water inlet in an end surface of the special-shaped wheel, and the water passing grooves are densely formed in the circumferential direction to cool a working surface.
2. The water passing grooves are axially formed in the full grinding surface of the special-shaped wheel to be less affected by the airflow barrier, and densely arranged to facilitate forming the internal cooling mode.
3. The entire grinding surface of the special-shaped wheel can be covered by cooling water under the forward action of a centrifugal force.
4. The opening of the water passing groove of each axial point is in positive correlation with the machin-

ing allowance (i.e., the grinding area of the point), that is, the larger the machining allowance, the larger the opening of the water passing groove.

5. The technical problem in which the cooling water is difficult to be applied to the full grinding surface in the overall one-time manufacturing is solved, thereby greatly reducing the manufacturing cost.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 is a schematic structural diagram of a special-shaped wheel in the prior art according to an embodiment of the present invention;

FIG. 2 is a schematic diagram of a water passing hole of a special-shaped wheel in the prior art according to an embodiment of the present invention;

FIG. 3 is a schematic structural diagram of a special-shaped wheel having a water passing structure positively correlated with a full grinding surface according to an embodiment of the present invention;

FIG. 4 is a schematic structural diagram of a cushion block according to an embodiment of the present invention;

FIG. 5 is a schematic structural diagram of a water passing groove according to an embodiment of the present invention;

FIG. 6 is a principle diagram in which a water passing groove is formed according to an embodiment of the present invention;

FIG. 7 is a schematic structural diagram of a spiral water passing groove according to an embodiment of the present invention;

FIG. 8 is a top view of a water suction component according to an embodiment of the present invention;

FIG. 9 is a schematic structural diagram of a water suction component according to an embodiment of the present invention;

FIG. 10 is a schematic diagram of connection between a water suction component and a base according to an embodiment of the present invention;

FIG. 11 is a schematic diagram of an annular groove according to an embodiment of the present invention;

FIG. 12 is a schematic structural diagram of a water passing groove of an arc wheel according to an embodiment of the present invention;

FIG. 13 is a schematic diagram of cooling water flowing in an arc wheel according to an embodiment of the present invention;

FIG. 14 is a sectional view of an arc wheel according to an embodiment of the present invention;

FIG. 15 is a schematic structural diagram in which a water passing groove of a small-diameter abrasive wheel is formed according to an embodiment of the present invention;

FIG. 16 is a sectional view of a small-diameter abrasive wheel according to an embodiment of the present invention; and

FIG. 17 is a schematic diagram of cooling water flowing in a small-diameter abrasive wheel according to an embodiment of the present invention.

[0012] In the drawings, components represented by different numerals are listed as follows:

1. base; 2. water passing groove; 3. base spiral water passing groove; 4. cushion block; 5. cushion block spiral water passing groove; 6. water suction component; 7. cushion block annular groove; 8. base annular groove; 9. machining workpiece; 10. water passing hole; 101. grinding surface; 601. inner ring; 602. outer ring; and 603. water suction blade.

DETAILED DESCRIPTION

[0013] Principles and features of the present invention will be described below in combination with the accompanying drawings. Embodiments are merely used to explain the present invention rather than limit the scope of the present invention.

[0014] As shown in FIGs. 3-5, a special-shaped wheel having a water passing structure positively correlated with a full grinding surface includes a base 1; a grinding layer is attached to an outer wall of the base 1, and an outer circumferential surface of the grinding layer is a grinding surface 101; a water inlet is formed in a top surface of the base 1, and a connection hole for connecting an external device is formed in a bottom surface of the base 1. The special-shaped wheel further includes a plurality of water passing grooves 2; the plurality of water passing grooves 2 is densely formed around the base 1 by taking a central axis of the base 1 as an axis, communicates an inner side of the base 1 with the grinding surface 101, and axially covers the entire grinding surface 101. That is, the axial height of an opening of the water passing groove 2 covers the axial height of a grinded region of a machining workpiece 10, and the total length of accumulated circumferences of the corresponding water passing grooves 2 at respective axial grinding points of the grinding surface 101 is set in positive correlation with the grinding area of the grinding point.

[0015] Specifically, the total length of accumulated circumferences of the corresponding water passing grooves 2 at respective axial points of the grinding surface 101 is $n \times Wi$, wherein i refers to the grinding point on the grinding surface 101, n refers to the number of water passing grooves 2, and Wi refers to an opening width of the corresponding water passing groove 2 at the grinding point i.

[0016] The grinding area of the point i is set as S, such that the total length of accumulated circumferences ($n \times Wi$) is proportional to the grinding area S.

[0017] When the machining allowance gradually increases from an inner diameter to an outer diameter, the

opening of the water passing groove gradually widens from the inner diameter to the outer diameter.

[0018] For different shapes of machining workpieces 10, the grinding area of each axial point is different. As shown in FIG. 6, the grinding area S1 of the point A is greater than the grinding area S2 of the point B. Since the larger grinding area requires more water for cooling, the openings of the water passing grooves may be correspondingly designed in different sizes according to different water consumptions. In FIG. 6, as more water is required at the point A than the point B, the opening width W1 of the water passing groove is correspondingly designed to be greater than W2. The total length of accumulated circumferences (n×W) of water supply channels at respective axial points of the grinding surface is set in positive correlation with the grinding area (S) of the points.

[0019] Optionally, as an embodiment of the present invention, the total length of accumulated circumferences of the corresponding water passing grooves 2 at respective axial points of the grinding surface 101 is n×Wi, wherein i refers to the grinding point on the grinding surface 101, n refers to the number of water passing grooves 2, and Wi refers to an opening width of the corresponding water passing groove 2 at the grinding point i.

[0020] In the above embodiment, the opening width of the corresponding water passing groove 2 increases at a position with the large machining allowance, thereby satisfying cooling requirements.

[0021] Optionally, as an embodiment of the present invention, as shown in FIG. 7, the special-shaped wheel further includes a base spiral water passing groove 3. The base spiral water passing groove 3 is spirally formed around a middle portion of an inner wall of the base 1, and recessed toward an inner side of the base 1.

[0022] In the above embodiment, when the special-shaped wheel is rotated, a part of water axially rises under the action of the spiral groove to be supplied to a position with a larger grinding (cutting) area.

[0023] Optionally, as an embodiment of the present invention, as shown in FIG. 4, the special-shaped wheel further includes a cushion block 4 for connecting an external device. The cushion block 4 is of an annular block-shaped structure with a connection hole in the center, and the connection hole of the cushion block 4 is coaxial with a connection hole of the base 1 and the cushion block is fixedly disposed inside the base 1.

[0024] Optionally, as an embodiment of the present invention, as shown in FIG. 7, the special-shaped wheel further includes a cushion block spiral water passing groove 5. The cushion block spiral water passing groove 5 is spirally formed around a middle portion of an outer wall of the cushion block 4, and recessed toward an inner side of the cushion block 4.

[0025] In the above embodiment, when the special-shaped wheel is rotated, a part of water axially rises under the action of the spiral groove to be supplied to a position with a larger grinding (cutting) area.

[0026] Optionally, as an embodiment of the present invention, as shown in FIGs. 8-10, the special-shaped wheel further includes a water suction component. The water suction component 6 is disposed between the cushion block 4 and the base 1, and located at the water inlet of the base 1. The water suction component 6 includes an inner ring 601, an outer ring 602 and a plurality of water suction blades 603. The outer ring 602 sleeves the inner ring 601, and the water suction blades 603 are transversely connected between the inner ring 601 and the outer ring 602 and circumferentially distributed at intervals.

[0027] In the above embodiment, the water suction blades 603 can suck the cooling water into the abrasive wheel to increase the water supply amount and support the abrasive wheel.

[0028] Optionally, as an embodiment of the present invention, as shown in FIG. 11, a cushion block annular groove 7 is formed in a position, which corresponds to the water suction component 6, of the cushion block 4; a base annular groove 8 is disposed at a position, which corresponds to the water suction component 6, of the base 1; and the inner ring 601 and the outer ring 602 are embedded in the cushion block annular groove 7 and the base annular groove 8 respectively and fixedly connected into one piece.

[0029] For different shapes of machining workpieces 10, the grinding area of each axial point is different. As shown in FIGs. 12-14, for example, arc-shaped water passing grooves are formed around an arc wheel. Since machining allowances at positions close to end surfaces of both ends of the arc wheel are greater than the machining allowance in a middle portion thereof, openings close to the end surfaces of both ends of the arc wheel are wider than the middle portion thereof. An arrow in FIG. 13 refers to a flowing path of cooling water.

[0030] As shown in FIGs. 15-17, for example, arc-shaped water passing grooves are formed around a small-diameter abrasive wheel. Since the machining allowance at a position close to a lower end surface of the small-diameter abrasive wheel is greater than machining allowances in a middle portion and at an upper end thereof, an opening of a water passing groove close to the lower end surface of the small-diameter abrasive wheel is wider than the middle portion and the upper end thereof, and the opening of the water passing groove of the small-diameter abrasive wheel gradually widens from the upper end to the lower end. An arrow in FIG. 17 refers to a flowing path of cooling water.

[0031] In the present invention, feed water enters from the water inlet in the end surface of the special-shaped wheel, and the water passing grooves are densely arranged in the circumferential direction to cool the working surface. The water passing grooves 2 are axially formed in the full grinding surface of the special-shaped wheel to be less affected by the airflow barrier, and densely arranged to facilitate forming the internal cooling mode. The entire grinding surface of the special-shaped wheel

can be covered by the cooling water under the forward action of the centrifugal force. The opening of the water passing groove 2 of each axial point is in positive correlation with the machining allowance (i.e., the grinding area of the point), that is, the larger the machining allowance, the larger the opening of the water passing groove 2. The technical problem in which the cooling water is difficult to be applied to the full grinding surface in the overall one-time manufacturing is solved, thereby greatly reducing the manufacturing cost.

[0032] The foregoing descriptions are merely preferred embodiments of the present invention, and are not intended to limit the present invention. Within the spirit and principles of the present invention, any modifications, equivalent substitutions, improvements, and the like are within the protection scope of the present invention.

Claims

1. A special-shaped wheel having a water passing structure positively correlated with a full grinding surface, comprising: a base (1), wherein a grinding layer is attached to an outer wall of the base (1), an outer circumferential surface of the grinding layer is a grinding surface (101), a water inlet is formed in a top surface of the base (1), and a connection hole for connecting an external device is formed in a bottom surface of the base (1); and the special-shaped wheel further comprises a plurality of water passing grooves (2), wherein the plurality of water passing grooves (2) is densely formed around the base (1) by taking a central axis of the base (1) as an axis, communicates an inner side of the base (1) with the grinding surface (101), and axially covers the entire grinding surface (101); and the total length of accumulated circumferences of the corresponding water passing grooves (2) at respective axial grinding points of the grinding surface (101) is set in positive correlation with the grinding area of the grinding point.

2. The special-shaped wheel according to claim 1, wherein the total length of accumulated circumferences of the corresponding water passing grooves (2) at respective axial points of the grinding surface (101) is n×Wi, wherein i refers to the grinding point on the grinding surface (101), n refers to the number of water passing grooves (2), and Wi refers to an opening width of the corresponding water passing groove (2) at the grinding point i.

3. The special-shaped wheel according to claim 1, further comprising: a base spiral water passing groove (3), wherein the base spiral water passing groove (3) is spirally formed around a middle portion of an inner wall of the base (1), and recessed toward an inner side of the base (1).

4. The special-shaped wheel according to any one of claims 1 to 3, further comprising: a cushion block (4) for connecting an external device, wherein the cushion block (4) is of an annular block-shaped structure with a connection hole in the center, the connection hole of the cushion block (4) is coaxial with a connection hole of the base (1), and the cushion block (4) is fixedly disposed inside the base (1).

5. The special-shaped wheel according to claim 4, further comprising: a cushion block spiral water passing groove (5), wherein the cushion block spiral water passing groove (5) is spirally formed around a middle portion of an outer wall of the cushion block (4), and recessed toward an inner side of the cushion block (4).

6. The special-shaped wheel according to claim 4, further comprising: a water suction component, wherein the water suction component (6) is disposed between the cushion block (4) and the base (1), and located at the water inlet of the base (1); the water suction component (6) comprises an inner ring (601), an outer ring (602) and a plurality of water suction blades (603); the outer ring (602) sleeves the inner ring (601), and the water suction blades (603) are transversely connected between the inner ring (601) and the outer ring (602) and circumferentially distributed at intervals.

7. The special-shaped wheel according to claim 6, wherein a cushion block annular groove (7) is formed in a position, which corresponds to the water suction component (6), of the cushion block (4); a base annular groove (8) is formed in a position, which corresponds to the water suction component (6), of the base (1); and the inner ring (601) and the outer ring (602) are embedded in the cushion block annular groove (7) and the base annular groove (8) respectively and fixedly connected into one piece.

Patentansprüche

1. Ein speziell geformtes Rad mit einer Wasserdurchlassstruktur, die positiv mit einer vollständigen Schleiffläche korreliert, umfassend: eine Basis (1), wobei eine Schleifschicht an einer Außenwand der Basis (1) angebracht ist, eine äußere Umfangsfläche der Schleifschicht eine Schleiffläche (101) ist, ein Wassereinlass in einer oberen Fläche der Basis (1) ausgebildet ist und ein Anschlussloch zum Anschluss eines externen Geräts in einer unteren Fläche der Basis (1) ausgebildet ist; und das speziell geformte Rad umfasst ferner eine Vielzahl von Wasserdurchlassrillen (2), wobei die Vielzahl von Wasserdurchlassrillen (2) dicht um die Basis (1) ausgebildet ist, indem eine Mittelachse der Basis (1) als

Achse genommen wird, eine Innenseite der Basis (1) mit der Schleiffläche (101) verbindet und die gesamte Schleiffläche (101) axial bedeckt; und die Gesamtlänge der kumulierten Umfänge der entsprechenden Wasserdurchlassrillen (2) an jeweiligen axialen Schleifpunkten der Schleiffläche (101) in positiver Korrelation mit dem Schleifbereich des Schleifpunkts eingestellt ist.

2. Das speziell geformte Rad gemäß Anspruch 1, wobei die Gesamtlänge der kumulierten Umfänge der entsprechenden Wasserdurchgangsrillen (2) an jeweiligen axialen Punkten der Schleiffläche (101) n $\times$ Wi beträgt, wobei i sich auf den Schleifpunkt auf der Schleiffläche (101) bezieht, n sich auf die Anzahl der Wasserdurchgangsrillen (2) bezieht und Wi sich auf eine Öffnungsbreite der entsprechenden Wasserdurchgangsrille (2) am Schleifpunkt i bezieht.

3. Das speziell geformte Rad gemäß Anspruch 1, das weiterhin umfasst: eine spiralförmige Wasserdurchlassnut (3) an der Basis, wobei die spiralförmige Wasserdurchlassnut (3) an der Basis spiralförmig um einen mittleren Abschnitt einer Innenwand der Basis (1) herum geformt ist und in Richtung einer Innenseite der Basis (1) vertieft ist.

4. Das speziell geformte Rad gemäß einem der Ansprüche 1 bis 3, das außerdem umfasst: einen Polsterblock (4) zum Anschließen eines externen Geräts, wobei der Polsterblock (4) eine ringförmige blockförmige Struktur mit einem Anschlussloch in der Mitte aufweist, das Anschlussloch des Polsterblocks (4) koaxial zu einem Anschlussloch der Basis (1) ist und der Polsterblock (4) fest innerhalb der Basis (1) angeordnet ist.

5. Das speziell geformte Rad nach Anspruch 4, das außerdem umfasst: eine spiralförmige Wasserdurchlassnut (5) des Polsterblocks, wobei die spiralförmige Wasserdurchlassnut (5) des Polsterblocks spiralförmig um einen mittleren Abschnitt einer Außenwand des Polsterblock (4) herum geformt ist und in Richtung einer Innenseite des Polsterblocks (4) vertieft ist.

6. Das speziell geformte Rad gemäß Anspruch 4, das außerdem Folgendes umfasst: eine Wassersaugkomponente, wobei die Wassersaugkomponente (6) zwischen dem Polsterblock (4) und der Basis (1) angeordnet ist und sich am Wassereinlass der Basis (1) befindet; die Wassersaugkomponente (6) umfasst einen Innenring (601), einen Außenring (602) und eine Vielzahl von Wassersaugblättern (603); der Außenring (602) umschließt den Innenring (601), und die Wassersaugblätter (603) sind quer zwischen dem Innenring (601) und dem Außenring (602) verbunden und in Abständen umfangsmäßig verteilt.

7. Das speziell geformte Rad gemäß Anspruch 6, wobei eine ringförmige Polsterblocknut (7) an einer Position ausgebildet ist, die der Wasseransaugkomponente (6) des Polsterblocks (4) entspricht; eine ringförmige Basisnut (8) an einer Position ausgebildet ist, die der Wasseransaugkomponente (6) der Basis (1) entspricht; und der Innenring (601) und der Außenring (602) jeweils in der ringförmigen Polsterblocknut (7) und der ringförmigen Basisnut (8) eingebettet und fest zu einem Stück verbunden sind.

Revendications

1. Une meule de forme spéciale ayant une structure de passage d'eau positivement corrélée à une surface de meulage complète, comprenant : une base (1), dans laquelle une couche de meulage est fixée à une paroi extérieure de la base (1), une surface circonférentielle extérieure de la couche de meulage est une surface de meulage (101), une entrée d'eau est formée dans une surface supérieure de la base (1), et un trou de connexion pour connecter un dispositif externe est formé dans une surface inférieure de la base (1) ; et la meule de forme spéciale comprend en outre une pluralité de rainures de passage d'eau (2), dans laquelle la pluralité de rainures de passage d'eau (2) est densément formée autour de la base (1) en prenant un axe central de la base (1) comme axe, communique un côté intérieur de la base (1) avec la surface de meulage (101), et couvre axialement la totalité de la surface de meulage (101) ; et la longueur totale des circonférences accumulées des rainures de passage d'eau correspondantes (2) aux points de meulage axiaux respectifs de la surface de meulage (101) est définie en corrélation positive avec la zone de meulage du point de meulage.

2. Une meule de forme spéciale selon la revendication 1, dans laquelle la longueur totale des circonférences accumulées des rainures de passage d'eau correspondantes (2) aux points axiaux respectifs de la surface de meulage (101) est n $\times$ Wi, où i fait référence au point de meulage sur la surface de meulage (101), n fait référence au nombre de rainures de passage d'eau (2), et Wi fait référence à une largeur d'ouverture de la rainure de passage d'eau correspondante (2) au point de meulage i.

3. Une meule de forme spéciale selon la revendication 1, comprenant en outre : une rainure de passage d'eau en spirale de base (3), dans laquelle la rainure de passage d'eau en spirale de base (3) est formée en spirale autour d'une partie médiane d'une paroi intérieure de la base (1), et en retrait vers un côté intérieur de la base (1).

4. Une meule de forme spéciale selon l'une quelconque des revendications 1 à 3, comprenant en outre : un bloc coussin (4) pour connecter un dispositif externe, dans laquelle le bloc coussin (4) est d'une structure en forme de bloc annulaire avec un trou de connexion au centre, le trou de connexion du bloc coussin (4) est coaxial avec un trou de connexion de la base (1), et le bloc coussin (4) est disposé de manière fixe à l'intérieur de la base (1).

5. Une meule de forme spéciale selon la revendication 4, comprenant en outre : une rainure de passage d'eau en spirale de bloc coussin (5), dans laquelle la rainure de passage d'eau en spirale de bloc coussin (5) est formée en spirale autour d'une partie médiane d'une paroi extérieure du bloc coussin (4), et en retrait vers un côté intérieur du bloc coussin (4).

6. Une meule de forme spéciale selon la revendication 4, comprenant en outre : un composant d'aspiration d'eau, le composant d'aspiration d'eau (6) étant disposé entre le bloc coussin (4) et la base (1), et situé à l'entrée d'eau de la base (1) ; le composant d'aspiration d'eau (6) comprend une bague intérieure (601), une bague extérieure (602) et une pluralité de lames d'aspiration d'eau (603) ; la bague extérieure (602) enveloppe la bague intérieure (601), et les lames d'aspiration d'eau (603) sont reliées transversalement entre la bague intérieure (601) et la bague extérieure (602) et réparties circonférentiellement à intervalles.

7. Une meule de forme spéciale selon la revendication 6, dans laquelle une rainure annulaire de bloc coussin (7) est formée dans une position qui correspond au composant d'aspiration d'eau (6) du bloc coussin (4) ; une rainure annulaire de base (8) est formée dans une position qui correspond au composant d'aspiration d'eau (6) de la base (1) ; et la bague intérieure (601) et la bague extérieure (602) sont encastrées dans la rainure annulaire de bloc coussin (7) et la rainure annulaire de base (8) respectivement et reliées de manière fixe en une seule pièce.

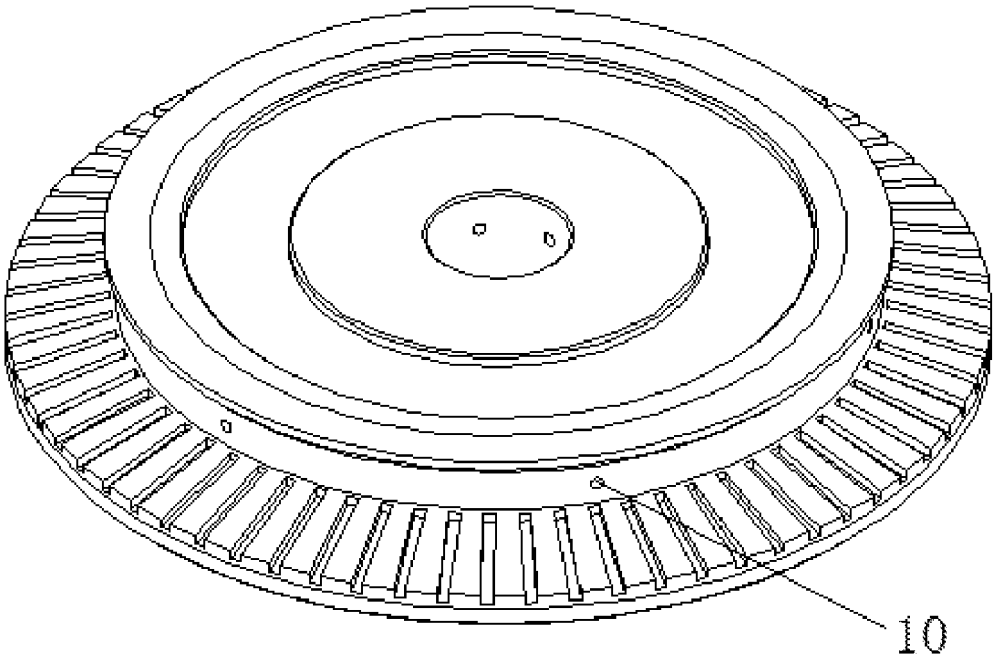


FIG. 1

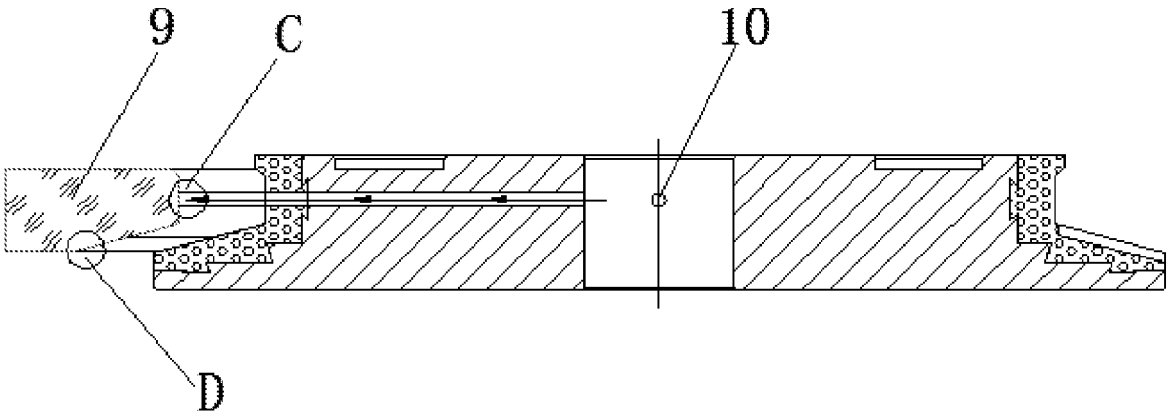


FIG. 2

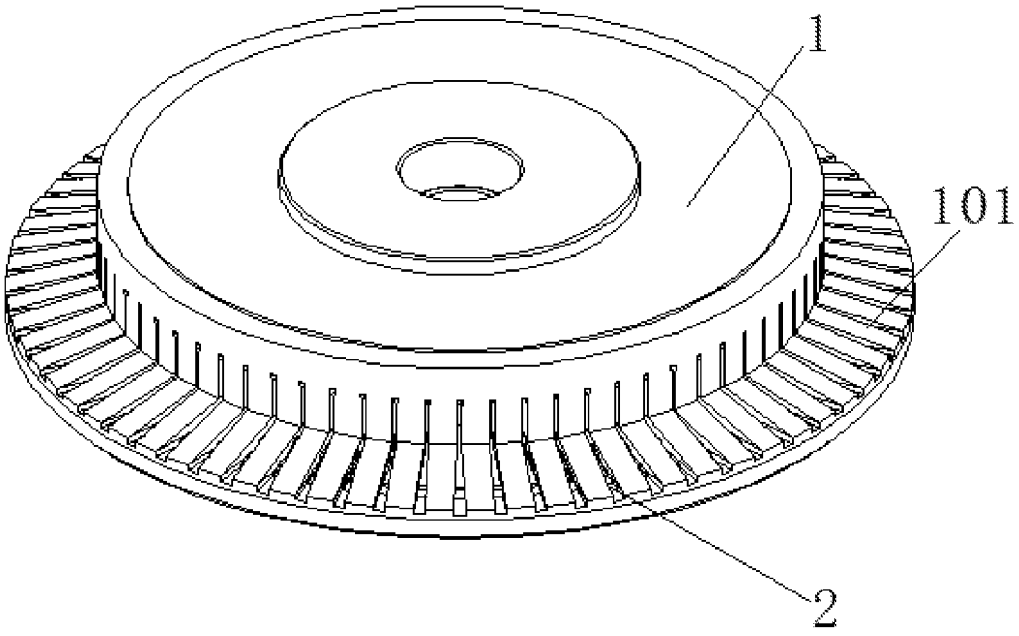


FIG. 3

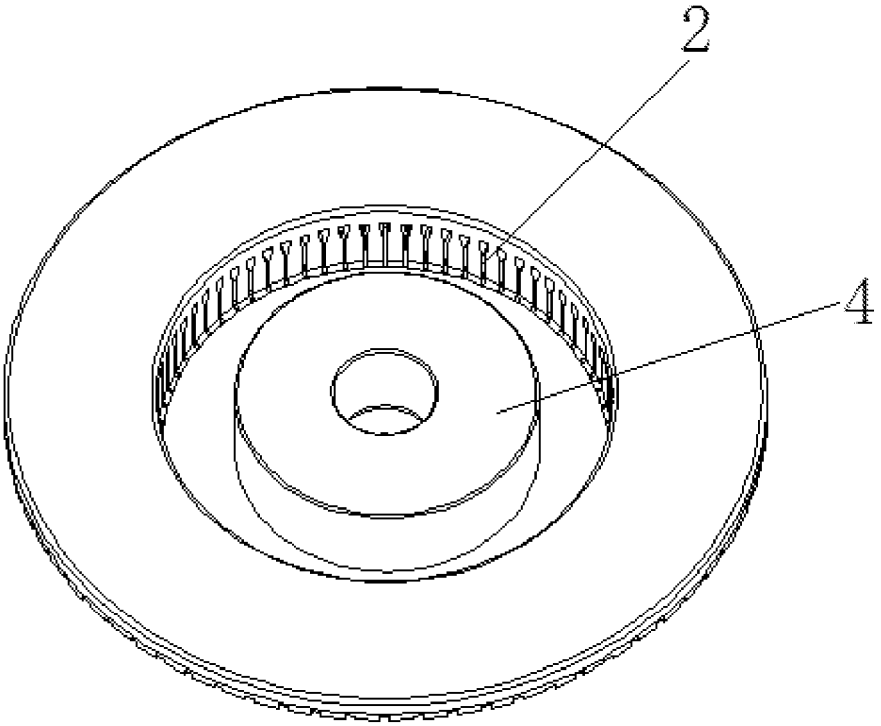


FIG. 4

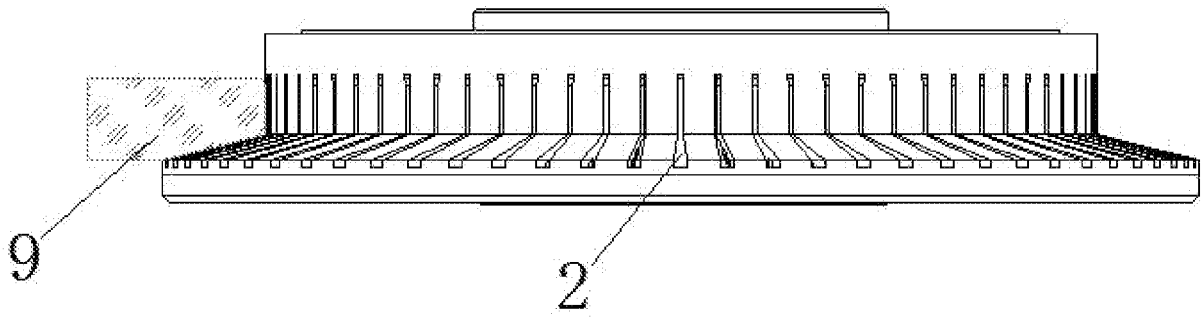


FIG. 5

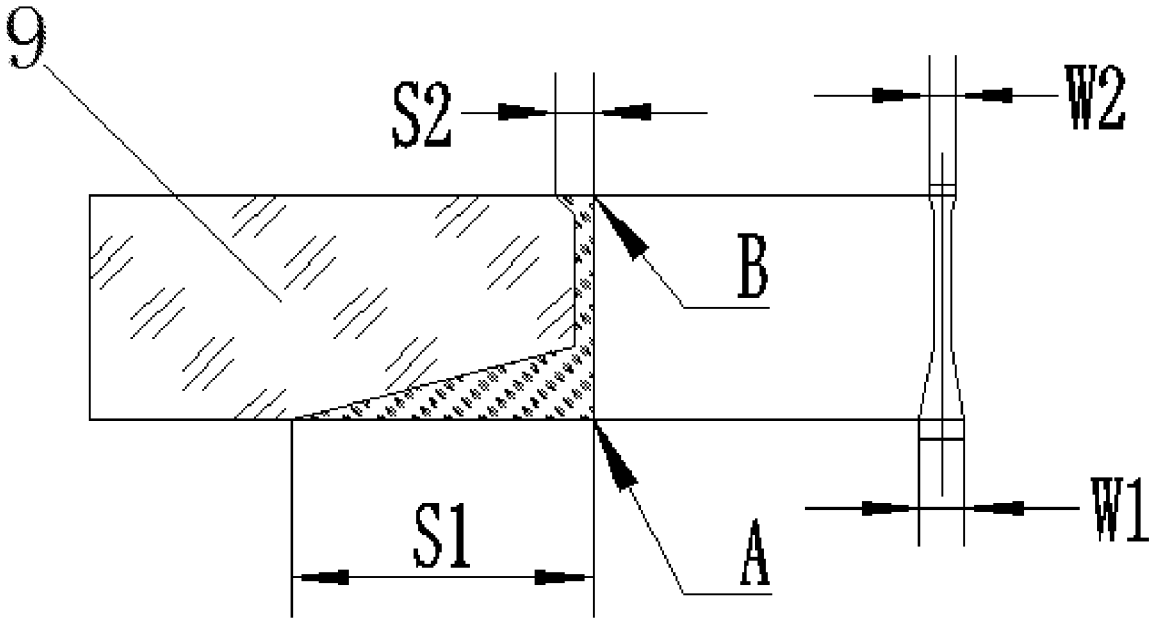


FIG. 6

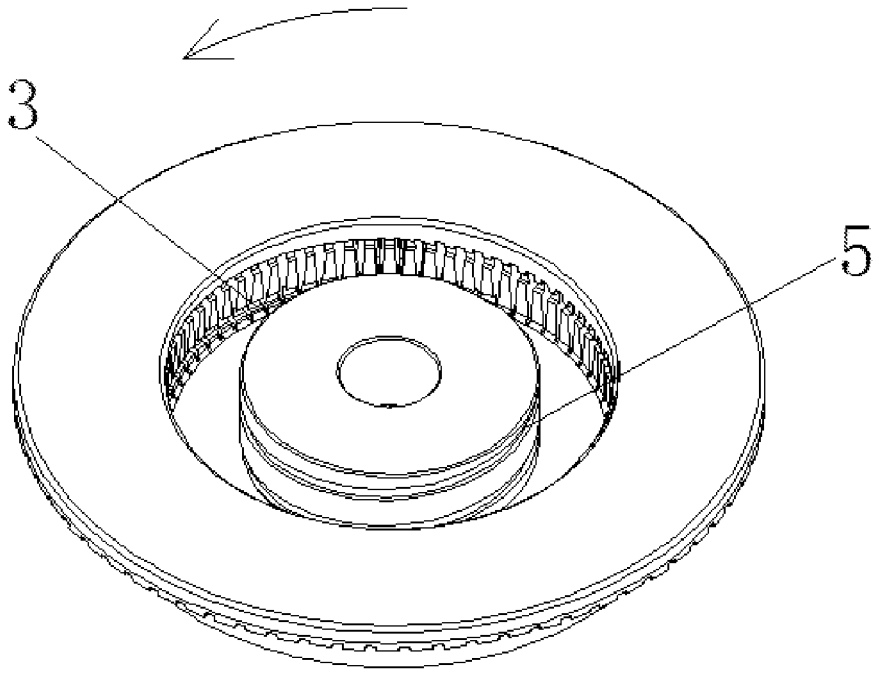


FIG. 7

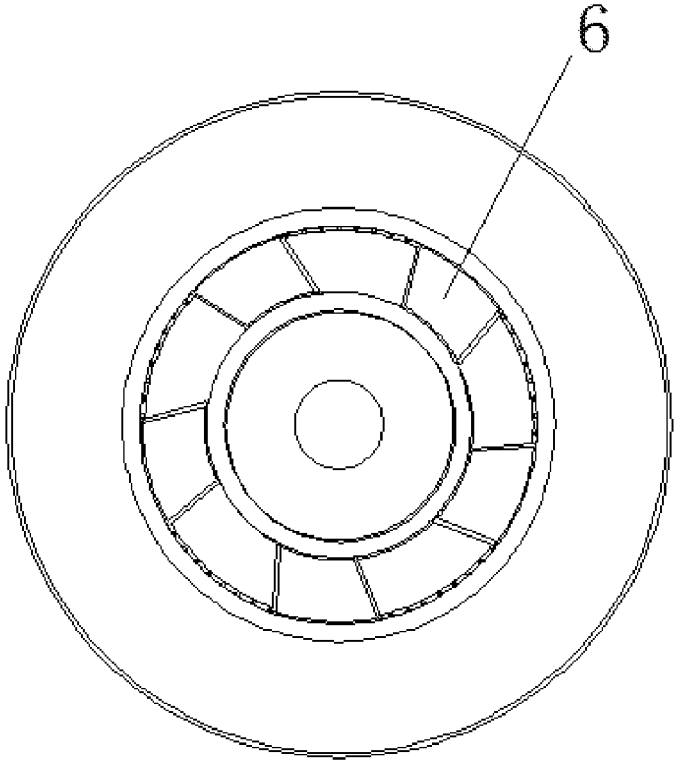


FIG. 8

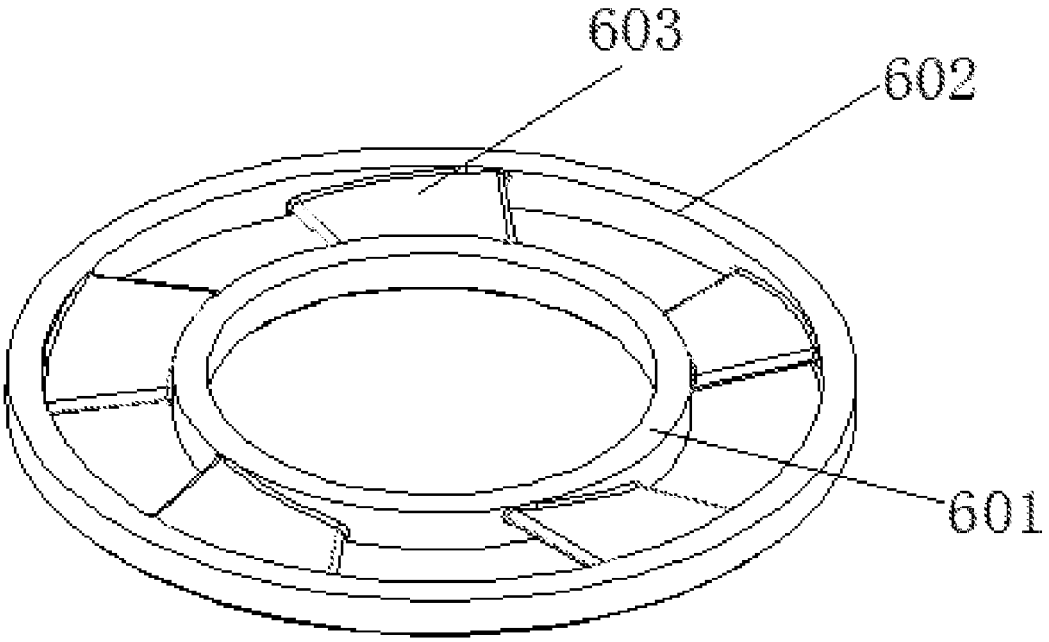


FIG. 9

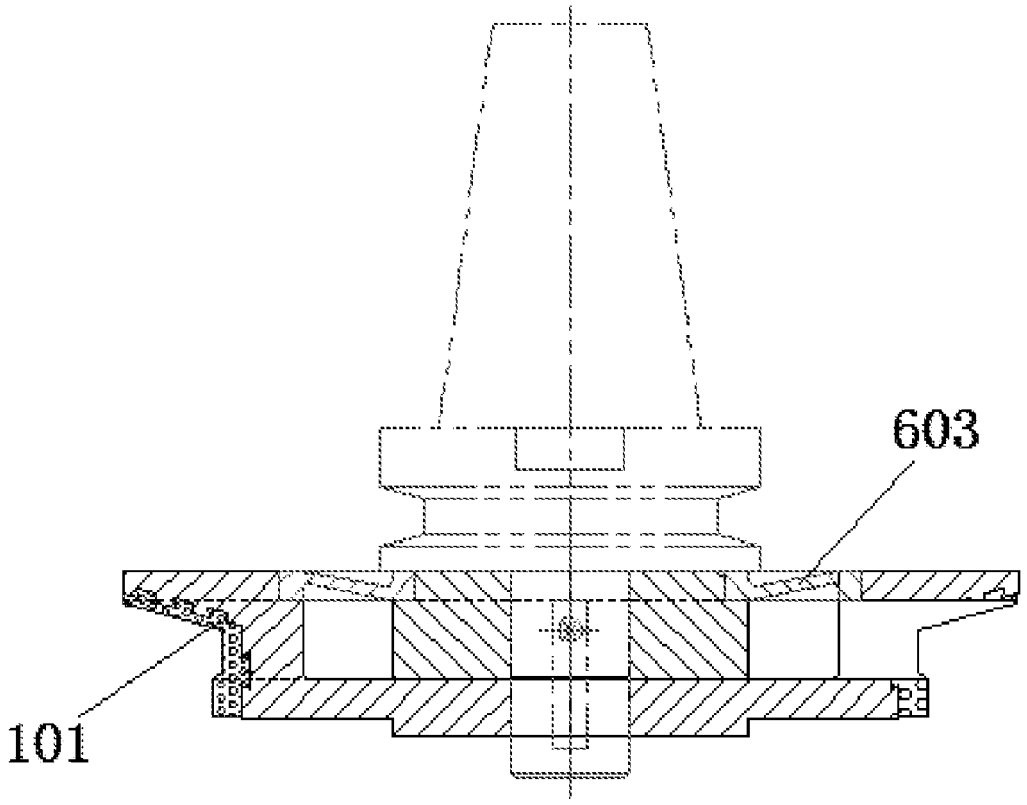


FIG. 10

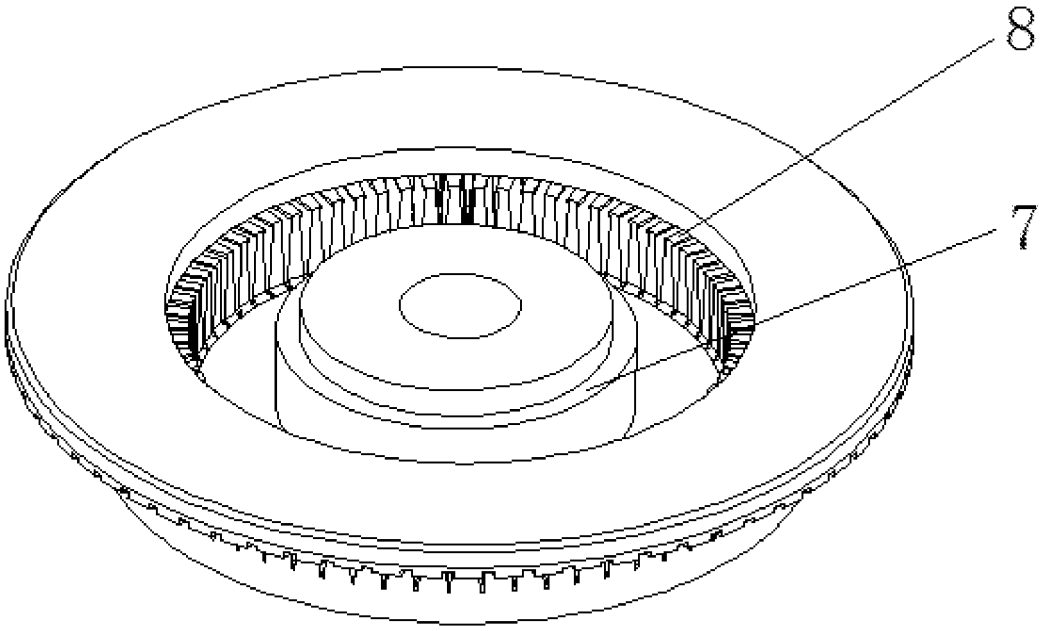


FIG. 11

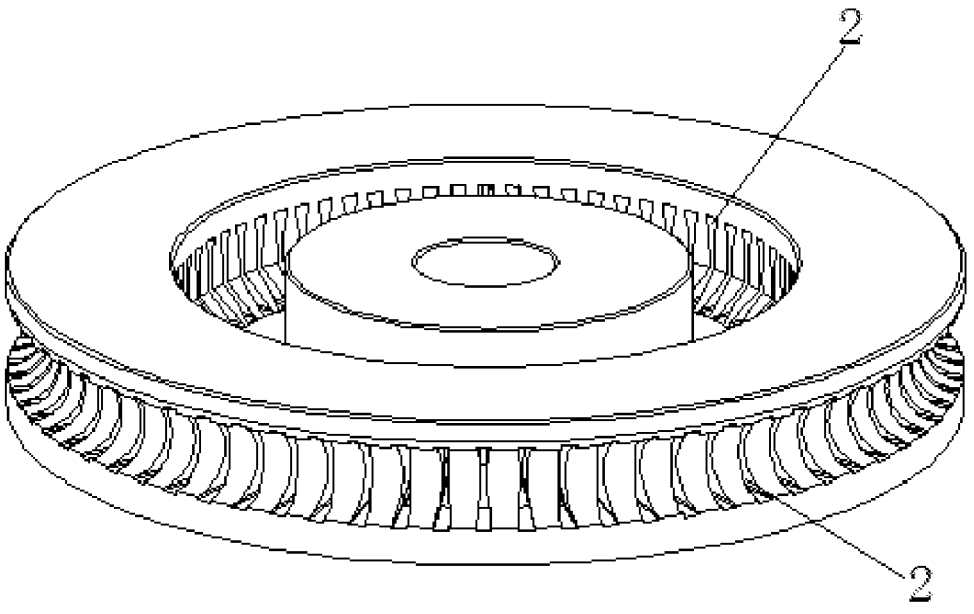


FIG. 12

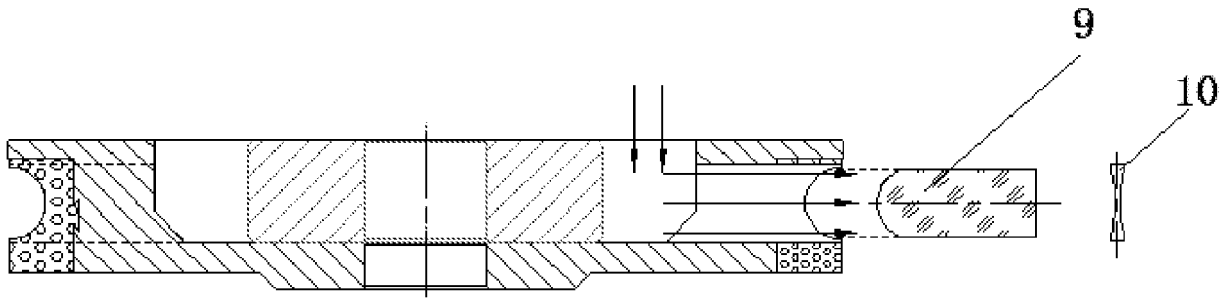


FIG. 13

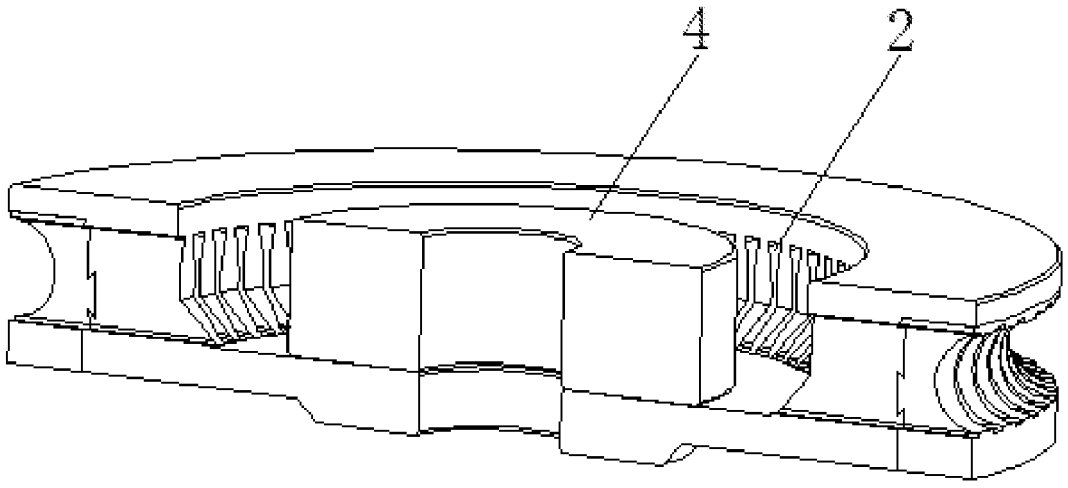


FIG. 14

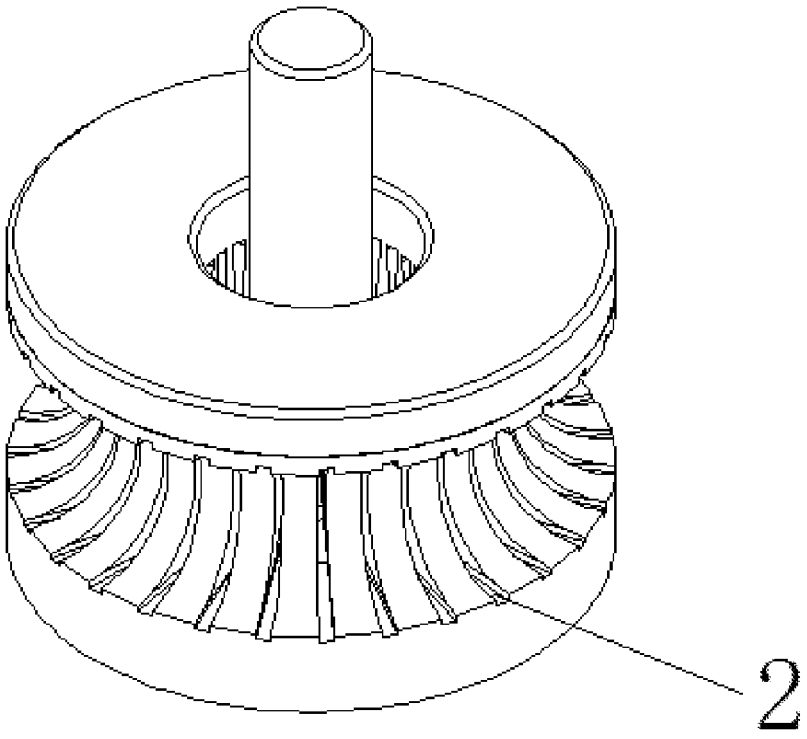


FIG. 15

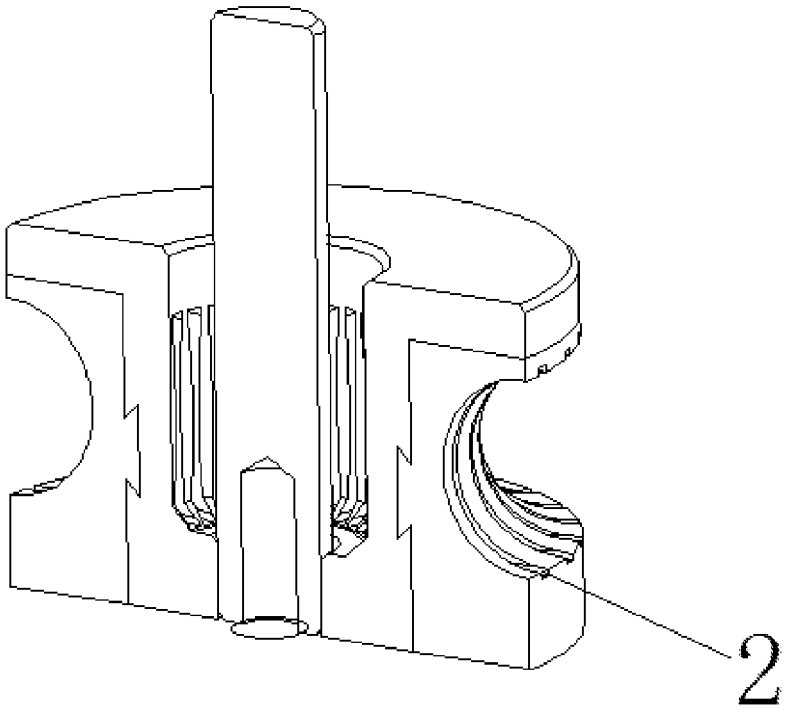


FIG. 16

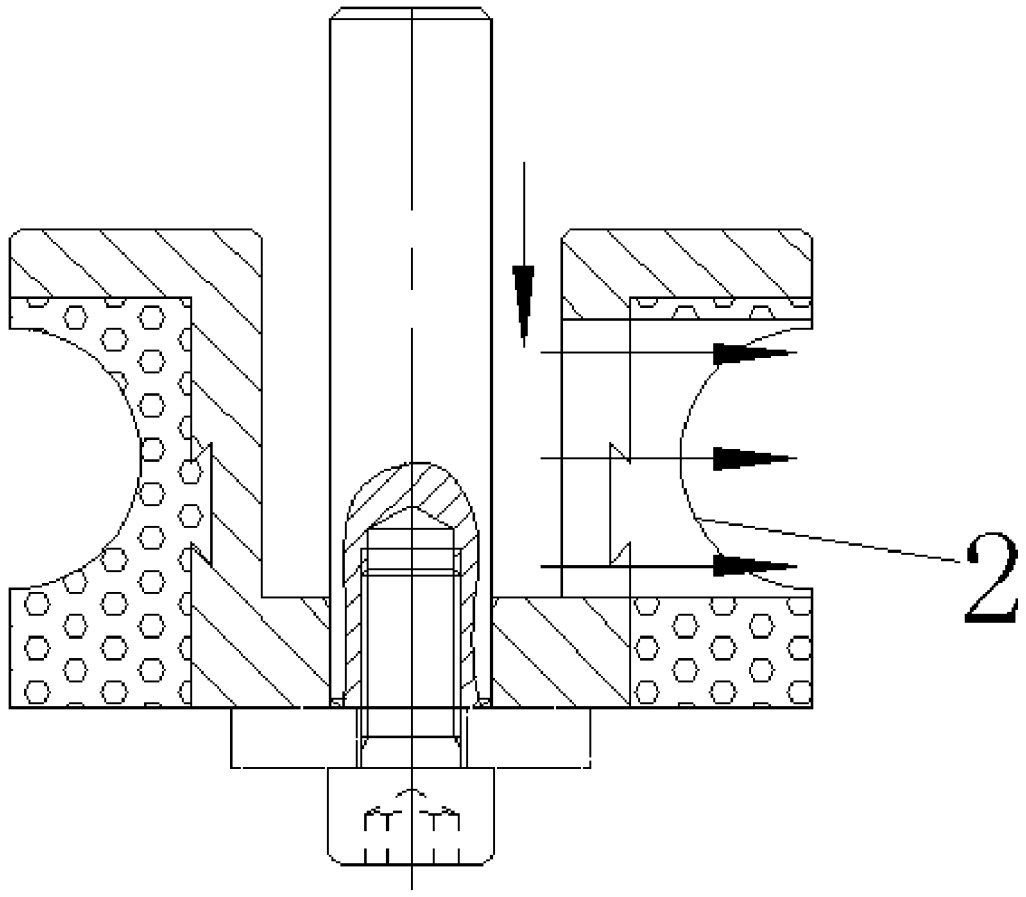


FIG. 17

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 3683566 A **[0003]**
- WO 2019174580 A **[0003]**