Adv Swapnil Jayantrao Gawande
(IN/PA-1587)
Office: Plot no 130,
C/o Dhatrak, Hanuman nagar,
Medical Square, Nagpur.
Mob: 9890333567
Resi: R9 Harshnil, Eknath puram
near Shankar nagar, Amravati
Ph: 0721-2566861
E-mail:- sjgawande@gmail.com

To
The controller of patents,
The patent office,
At Mumbai

APPLICATION FOR PATENT ALONG WITH COMPLETE SPECIFICATION

APPLICANT(S)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

Documents attached with the application:-

	Number of Pages
Form 1	3
Form 2	14
Form 3	1
Form 26	1
TOTAL	19 pages

Fee paid along with the application:-

1. Form 1 Rupees 1000(one thousand only)

TOTAL AMOUNT RUPEES 1000(ONE THOUSAND ONLY)
Mode of payment in Cash/Cheque/bank draft bearing no

FORM 1 (FOR OFFICE USE ONLY)

THE PATENT ACT 1970
(39 OF 1970)
And
The patent rules, 2003

Application number:
Filing date:
amount of fee paid:
CBR NO:

APPLICATION FOR GRANT OF PATENT
[See sec 7, 54,135 and rule20 (1)]

1 APPLICANT(S)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

2 Inventor(s)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

2. TITLE OF INVENTION

Rotary Multiple Axial Round-Vane Compressor

4. ADDRESS FOR CORRESPONDANCE OF AUTHORISED PATENT AGENT IN INDIA:-

R 9 Harshnil, Eknath puram
Near yogakshem coloney,
Amravati, Maharashtra

Ph: 0721-2566861
Mob: 9890333567
E-mail:-sjgawande@gmail.com

5. DECLARATION:

(i) Declaration by the inventors

We the above named inventors are the true and first inventors for this invention
Dated this 20th day September 2010

Signature of the inventors

Name: (1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

(ii) Declaration by the applicants

We the applicants hereby declare that:-
We are in possession of above mentioned invention.
The complete specification relating to the invention is filed with the application
There is no lawful ground of objection to the grant of patent to us.

Signature of the applicants

Name: (1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

6. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a)Complete specification in duplicate

(b)Drawings in duplicate

(c) Statement and undertaking on form 3 in duplicate

(d) Abstract in duplicate

(e) Form number 26 Power of authorization to patent agent.

Fee Rs 1000 in Cash/Cheque/bank draft bearing no

On bank of Maharashtra

We hereby declare that to the best our knowledge, information and belief the facts and the matter stated herein are correct and we request that the patent may be granted to us for the said invention.

Dated this 20th day September 2010

Signature:

Name :(1) Ingole Vijay Tulshiram

(2) Ingole Ashutosh Vijay

(3) Ingole Paritosh Vijay

FORM 2

THE PATENT ACT 1970
(39 OF 1970)
AND
The patent rules, 2003

COMPLETE SPECIFICATION
(See section 10: rule 13)

1. TITLE OF INVENTION
Rotary Multiple Axial Round-Vane Compressor

2 APPLICANTS(S)

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602

3. PREAMBLE TO THE DESCRIPTION

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION.

Technical field of invention:

The present invention relates to gas and air compressor and more particularly to multiple rotary vane compressor and vacuum pump.

Prior art:

The conventional vane-type rotary compressor has radial vanes slidably mounted on a rotor. The rotor is rotatably but eccentrically mounted on a cylinder having certain profile. The rotor carries certain number of evenly and slidably placed vanes in the slots provided on rotor and when rotor rotates at high speed the outer edge of the vanes is outwardly forced against the inner surface of the cylinder causing heavy wear and tear in the absence of lubricant. The vanes are generally of rectangular in shape and sealing of such a shape posses a technical problems and sustained sealing of the rotor charge cavity becomes difficult over a period time.

Problems to be solved:

The rotating-vane compressor should be such so as to circumvent and obviate the vital problem of rubbing of vanes on the surface of the cylinder due to centrifugal force and associated wear and tear of contact surfaces due to friction. It should have some arrangement to mitigate the leakages in air chambers and leakages through the cylinder faces and use of springs between the vanes to be avoided due to difficulty in their replacement.

Object:

The basic objective of the present invention is to circumvent and obviate the vital problem of rubbing of vanes on the surface of the cylinder due to centrifugal force and associated wear and tear of contact surfaces due to friction. Further objective of the present invention is to mitigate the leakages in air chambers and leakages through the cylinder faces. Still further objective of the present invention is to eliminate use of springs between the vanes. Another object of the present invention is to avoid use of oil sump for the lubrication and sealing.

In the improved type of vane-type of compressor the vanes are located axially on the rotor and hence during rotation of rotor the vanes neither are influenced by centrifugal force nor subjected to wear and tear. Further the cylinders with a novel

profiles are placed on either sides of the rotor such that the vanes remain always in adequate contact with the surfaces of the cylinders without the aid of springs or other means because axial sliding vanes engaged on the cylinder surfaces on either sides of the rotor are linked together so that at any angle of rotation the distance between the surfaces of cylinder is always equal to the length of the linked vanes. Further the shape of the vane is round means circular hence sealing of air chamber is much easier as it fits snugly in cylinder profile to obviate leakage. The rotor surface leakages are minimized by providing sealing rings on the circular face.

These and other advantages will be more readily understood by any person skilled in the art by referring to the following detailed description for a novel rotating vane compressor disclosed hereinafter with reference to the accompanying drawings and which are generally applicable to other compressor to fulfill particular application illustrated hereinafter.

STATEMENT:

Following specification provides rotary multiple axial round-vane compressor with two cylinders or end covers or cylinders and each comprising a novel circular groove on its inner side and these two cylinders sealing encloses the rotatably mounted rotor means fitted on its either side. The depth of each novel circular profile of the groove is sinusoidal and the radius of curvature of the groove is maintained constant. Another novelty of the preferred embodiment where the cylinders comprising grooves are axially turned with respect to each other such that the valley of groove means having maximum groove depth on one cylinder is aligned with crest of groove means having minimum groove depth of other cylinder so that the sum of the groove depths of these grooves at any point and at any angle remains constant. The axial vanes are made in such a way the extreme length means distance is according to the sum of the cylinder groove depth. This ensures that the vanes remain in contact with cylinder groove during rotations without the aid of spring or centrifugal force. The linked or jointed vanes move axially in and out in the vane housings and cylinder groove in simple harmonic motion. Each round vane is provided with easily replaceable sprung ring on its periphery to ensure air tight chambers and further it fits snugly in the cylinder groove. The plurality of such jointed vanes forming its associated air chamber move independently of each other during the operation of the compressor. Each cylinder housing is provided with inlet port for the intake of air and an outlet port for the compressed air. The housing may be provided with inlet for lubricating oil by utilizing centrifugal force due to rotor motion for the supply to the vane housing, vanes, grooves and air chambers.

A plurality of air chambers are formed within the housing in the space between two adjacent vanes, the inner portion of the cylinder groove and the flat portion of the rotor there in between. The other novelty of invention in which the cylinder circular groove is made in such a way that its depth varies in a sinusoidal manner means it goes on increasing through first half of circle means when the vanes rotate the chamber volume goes on increasing means intake of air or suction phase where air inlet is provided, further the depth goes on decreasing for second half of circle means when the vanes rotate chamber volume goes on decreasing means compression phase where outlet valve is provided.

These and other features and advantages will be more readily understood by referring to the following detailed illustrations for a novel rotary multiple axial round-vane compressor disclosed hereinafter with reference to the accompanying drawings and which are generally applicable to other compressor to fulfill particular application illustrated hereinafter.

BRIEF DESCRIPTION OF DRAWING:

The invention is described by way of example with reference to the following drawings

Sheet 1 of 4 illustrate cross-sectional view of rotor elevation in Figure-1A, partial cross sectional end elevation in Figure-1B and Figure-1C shows the elevation and plan of jointed vanes of the present invention.

Sheet 2 of 4 illustrates the elevation of one of the cylinder in Figure-2A and Figure-2B shows the cross-sectional end elevation of the present invention.

Sheet 3 of 4 illustrates the cross sections of left cylinder, rotor and right cylinder in Figure-4A, Figure-4B, and Figure-4C respectively as per Figure-1 and Figure-2 as per their assembly.

Sheet 4 of 4 is the cross sectional elevation Figure-4A and cross sectional side elevation Figure-4B of the assembly as per Figure-3A and Figure-3B of the preferred embodiments of the invention.

The manner in which the above-cited and other advantages and objects of the invention are obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and therefore not to be considered limiting on its scope, the invention will be described with additional specificity and details through the use of the accompanying drawings.

Detailed description:

Sheet 1 of 4 comprises cross-section of rotor subassembly of the preferred embodiments of rotary multiple axial round vane compressor. Figure-1A is a cross section of elevation of rotor 100 used in one of the preferred embodiment. Metal liner 129, 130 are provided on rotor surface to be in contact with cylinder grooves (not shown). Pluralities of vane housings 112-1, 112-4 being four in number for the present embodiment are equally spaced on one side of the flat surface of rotor 100 and axially aligned with vane housing 121-2, 121-5 so that pluralities of vane housings 1112-1, 112-4 on one side of rotor face are aligned with respective pluralities of vane housing 121-2, 121-5 of other face of rotor 100. Pluralities of jointed vanes 120-1 placed inside of vane housing 112-1 and 121-2 shown. Similarly jointed vane 120-9 placed inside vane housing 121-5 and 121-8 as shown. Under cuts 126 are formed on either side of the rotor 100. Circular grooves 116, 127, 128 are formed on the sides of the 126 for oil seal and sealing rings respectively. Pluralities of lubricating oil ducts 115, 125 are provided to lubricate the pluralities of vane housing 121-1 at opening 119 which are further connected to openings of pluralities of ducts 114, 124 to supply lubricating oil to the grooves (not shown) of cylinders on either side of rotor 100. Sealing rings 111 are located on the circumference of the rotor 100. Figure-1B shows the partial cross section of the side elevation of rotor 100. It shows four vane housing 121 equally spaced around the flat surface of rotor 100. It further shows the pluralities jointed vanes 120-1 placed inside the pluralities of vane housing 121. It also shows in a circularly taken section B to show the pluralities of vane guiding holes 122 and profile 121-5 of the vane housing. Partial circular section A is taken to show lubricating oil duct 125 and its opening 123 in the vane hosing 122-1, its opening 124 for the housing groove (not shown), section of vane sprung ring 120D, cross section of vane 120E. It also shows rotor key-way slot 117. Figure-1C shows the assembly of round jointed vane 120. It shows pluralities of sprung rings 120D put on the groove 120E formed on the pluralities of round vanes 120-1 and 120-2, partial cross-section of round vane 120-2 showing section of vane 120E , section of sprung ring 120D, pluralities of guiding pins 120C joining the vanes 120-1 and 120-2 thus forming pluralities of jointed vane assembly 120. The pluralities of jointed vane pin slide in the directions of arrow through pluralities of holes 122 made in pluralities of vane housing 121-1 of rotor 100. PCD of vane assembly 130 is shown which is equal to the PCD of cylinder PCD 213 (not shown). Presently only four in number of jointed vane 120 are shown in the present

one of the embodiments however; number of such vane assemblies may be vary with applications.

Sheet 2 of 4 shows the elevation of one of the two cylinders 200 and 400 (not shown) both being similar. Figure-2A shows mounting holes 218, inlet duct 201, compressed air duct 207, hole 220 for shaft 150 (not shown), air inlet port 212, and relative direction of rotation by arrow 211 of rotor 100 (not shown) with respect to cylinder 200. It further shows the PCD 210 and inner contour 226 and outer contour 227 of groove 209. The groove is divided in two parts means from S to T and from T to S. The depth of the groove increases in sinusoidal form from S to T as shown by 230, 231, 232, 233, and 234 and similarly decreases in sinusoidal from T to S. The depth of the groove is maximum at point T means valley and minimum at points S means crest. The air inlet port 212 is located between point T to S. Jointed vanes fit snugly in the cylinder groove profile during entire rotation and the volume means chamber of inlet air is formed between two successive vanes, rotor surface and cylinder groove and during rotation of rotor goes on increasing from point T to S thus creating a vacuum means suction phase therefore air is drawn in from the inlet or suction port 223. When successive vanes move from T to S its entrapped volume in the chamber goes on decreasing as readily seen from sections 230 through 235 in the direction of rotation, shown by arrow, of rotor 100 (not shown) means creating compression phase. The relative position of compressed air outlet 207 is shown. During this operation vane means jointed vanes move axially in the groove in a simple harmonic motion once in one rotation between crests and valleys of cylinder groove 209. In this manner for four vanes on each side the compressor go through four compression phases per cylinder means thus total eight compression phases per revolution. The cylinder 200 and 400 (not shown) are similar but angularly turned and oriented with respect to each other in such a manner that the valley means T of one cylinder groove is aligned with the crest means S of other cylinder groove means sum of the depth of the respective grooves of the cylinders at any angle remains constant so that each round vane of the jointed vane fits snugly in the respective grooves and further guided for its axial movement during entire rotation of rotor 100. Figure-2B shows the cross section view of the cylinder 200. It shows mounting holes 201 for fixing bolts, bearing housing 205, bearing 206, lubricating oil duct 204, grooves 202 for sealing rings, groove 203 for oil seal, profile of cylinder groove 209 and compressed air outlet 208, cylinder groove 209.

Sheet 3 of 4 illustrates various subassemblies described in sheets 1 of 4 and 2 of 4 in the manner in which they are to be assembled to form the preferred embodiment of rotary multiple axial round-vane compressor. Figure-3B shows the

concentrically mounted rotor 100, concentrically located shaft 150, bearing seats 151, 152, shaft key-way 153, rotor key-way 117, shrink collar 155 and in the manner they are to be assembled by the direction of arrows. It further shows the extreme left hand and right hand positions of jointed vane assemblies 120-1 in the rotor vane housings 121-1. Further the cylinder 200 and 400 are turned and oriented angularly so that valley 409 of cylinder 400 is at 180^0 with respect to valley 209 of cylinder 200 as explained elsewhere. They are placed on either sides of rotor 100 to form a sealed enclosure as shown in Figure-3A and Figure-3C respectively.

Sheet 4 of 4 illustrates the cross section of assembled rotary multiple axial round-vane compressor being the preferred embodiment comprising all subassemblies hitherto illustrated in sheet 3 of 4. It further shows the position of cylinder grooves and jointed vanes 120-1, 120-8, position of compressed air outlet 207, 407. The side elevation as shown in Figure-4B shows the partial cross section of the complete assembly. It further shows the inlet port 212, 412 with air inlet 212, 412 and compressed air outlet 207, 407 of cylinder 200 and 400 respectively with their relative angular orientation.

There have thus been described certain preferred embodiments of rotary multiple axial round-vane compressor provided in accordance with the present invention. While preferred embodiments have been described and disclosed, it will be recognized by those with skill in the art that modifications are within the true spirit and scope of the invention. The claims are intended to cover all such modifications.

CLAIMS

We claim:-

1 A rotary multiple axial round vane compressor comprising axially moving plurality of vanes to free them from harmful effect of centrifugal forces and the vanes and cylinder having matching profiles to achieves unique feature of rotary compressor to minimize wear, tear, vibration, noise.

2 One of the preferred embodiments of the device as claimed in claim 1 comprising:

a. a pair of cylinders and each having a cavity on one of its surfaces to enclose and seal the rotatably mounted rotor;

b. each cylinder having a circular groove on cylinder inner side surface and being concentric to the axis of rotation of rotor;

c. the depth of the grooves varies in sinusoidal manner , number of crest and valley of the groove be more than one such that there being one crest means minimum depth and one valley means maximum depth along the circle of groove means formed on cylinder inner surface;

d. the depth of the grooves can deviate from sinusoidal form however; there being one crest means minimum depth and two valley means maximum depth along the circle of groove means formed on cylinder inner surface;

e. the radius of curvature of the groove being constant means radial to the circle of groove means on cylinder inner surface ;

f. radius of circle of grooves on two cylinders being identical and concentric with rotor means shaft axis;

g. the cylinders being rotationally and concentrically turned and oriented with respect to each other such that crest point of groove of one cylinder aligned with valley point of groove of remaining cylinder so that the sum total of the depths of both grooves remain same all along the circular path of grooves;

h. rotor in the form of a disc;

i. a rotor rotatably and concentrically mounted within the cavities of cylinders;

j. both sides of rotor in conjunction with two grooves of cylinders on either sides being utilized for the operation of the said compressor;

k. axially means parallel to the axis of rotation;

l. jointed vane means two vanes axially aligned on either side of the rotor joined together to each other to form pluralities of jointed vanes;

m. a pluralities of axially movable jointed vanes located in axially aligned vane housings on both the surfaces of rotor;

n. each jointed vane moves axially and independently of other jointed vanes;

o. pluralities of vane housings equally spaced, axially aligned and formed on both surfaces of rotor;

p. jointed vane and vane housings being located on same pitch circle diameter as that of grooves of cylinders;

q. vane radius being same to the radius of curvature of cylinder groove means perpendicular to the pitch circle diameter of cylinder groove;

r. the distance between the tips of the jointed vane being the same as the axial distance including the depth of the grooves means circular sides of the jointed vane fitting fully or partly and snugly in the round cavities of grooves during rotations of pluralities of jointed vanes;

s. air chamber means volume of entrapped air formed between two successive jointed vanes being on same side of the rotor, portion of the groove and flat side surface of the rotor disc therein between;

t. each jointed vane axially moving once during each rotation of rotor;

u. each vane housing on one side of rotor being aligned with similar vane housing on the other side of rotor;

v. each jointed vane located inside axially formed vane housings and moves axially and independently of other jointed vanes;

w. jointed round vanes axially moving fully or partly and snugly inside the vane housings;

x. air intake port and compressed air outlet formed in each cylinder at a specific location with respect to direction of rotation of rotor.

3 In the device as claimed in claim 2 ideally round vanes are used but vanes of different geometrical profiles may be used according to the requirement and convenience.

4 The device as claimed in claim 2 wherein the formation of groove in cylinders being of special metal liner for higher temperature operation.

5 The device as recited in claim 2 wherein the rotor surface in contact with cylinder grooves being of special metal liner for higher temperature operation.

6 The device as recited in claim 2 wherein the vane be fitted with a replaceable sprung ring to minimize leakage in cylinder groove and easy replacement and maintenance.

7 The device as recited in claim 2 wherein the cylinders being different turned with respect to each other at any other angular orientation.

8 The device as recited in claim 2 comprises means for utilizing the centrifugal force of rotating rotor to forcibly lubricate the vanes, vane housing, cylinder grooves, surfaces in relative motion of the compressor comprising pluralities of lubricating oil ducts in contact with cylinder duct and further providing cooling of the rotor.

9 The device as claimed in claim 2 be used as a vacuum pump.

10 The device as claimed in claim 2 be used as a gas, air motor or turbine.

11 The device as recited in **claim 1 to 10 and** as described and illustrated in preferred embodiments and ascertain the nature of this invention and the manner in which it is to be performed and revealed in diagrams of Sheet 1 of 4 comprising Figure-1A, Figure-1B, and Figure-1C; sheet 2 of 4 comprising Figure-2A, Figure-2B; sheet 3 of 4 comprising Figure-3A, Figure-3B, Figure-3C; sheet 4 of 4 comprising Figure-4A, Figure-4B.

ABSTRACT

The conventional vane-type rotary compressor has radial vanes slidably mounted on a rotor. The rotor is rotatably mounted on an eccentrically centered cylinder having certain profile. The rotor carries certain number of vanes and when rotor rotates the outer edge of the vanes is outwardly forced against the inner surface of the cylinder causing heavy wear and tear. In the improved type of vane-type of compressor the vanes are located axially on the rotor and hence during rotation of rotor the vanes neither are influenced by centrifugal force nor subjected to wear and tear. Further the cylinders with a novel profiles are placed on either sides of the rotor such that the vanes remain always in contact with the surfaces of the cylinders without the aid of springs or other means. Further invention is described in detail with the help of

Sheet 1 of 4 illustrate cross-sectional view of rotor elevation in Figure-1A, partial cross sectional end elevation in Figure-1B and Figure-1C shows the elevation and plan of jointed vanes of the present invention.

Sheet 2 of 4 illustrates the elevation of one of the cylinder in Figure-2A and Figure-2B shows the cross-sectional end elevation of the present invention.

Sheet 3 of 4 illustrates the cross sections of left cylinder, rotor and right cylinder in Figure-4A, Figure-4B, and Figure-4C respectively as per Figure-1 and Figure-2 as per their assembly.

Sheet 4 of 4 is the cross sectional elevation Figure-4A and cross sectional side elevation Figure-4B of the assembly as per Figure-3A and Figure-3B of the preferred embodiments of the invention.

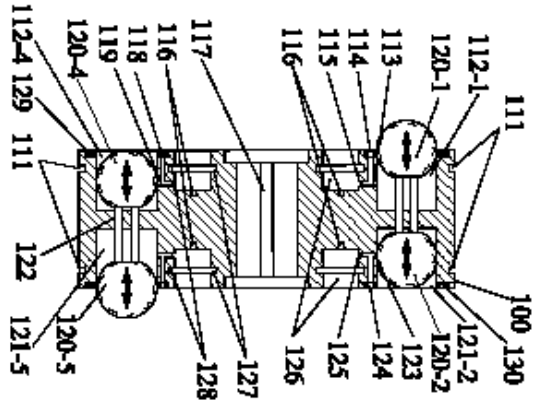

Figure-1A

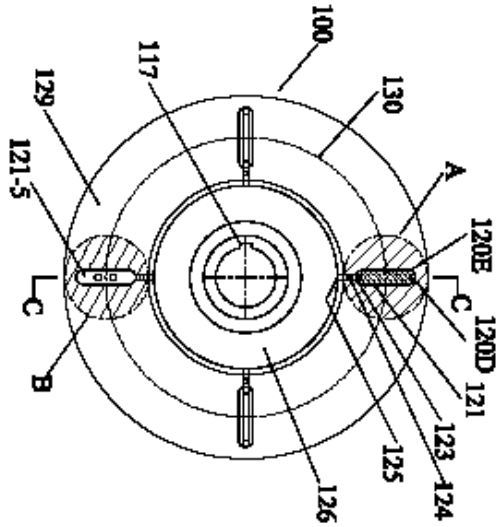

Figure-1B

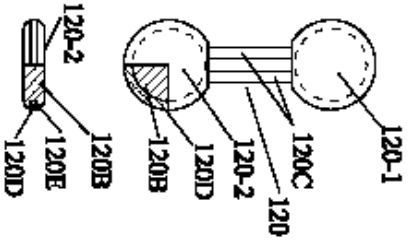

Figure-1C

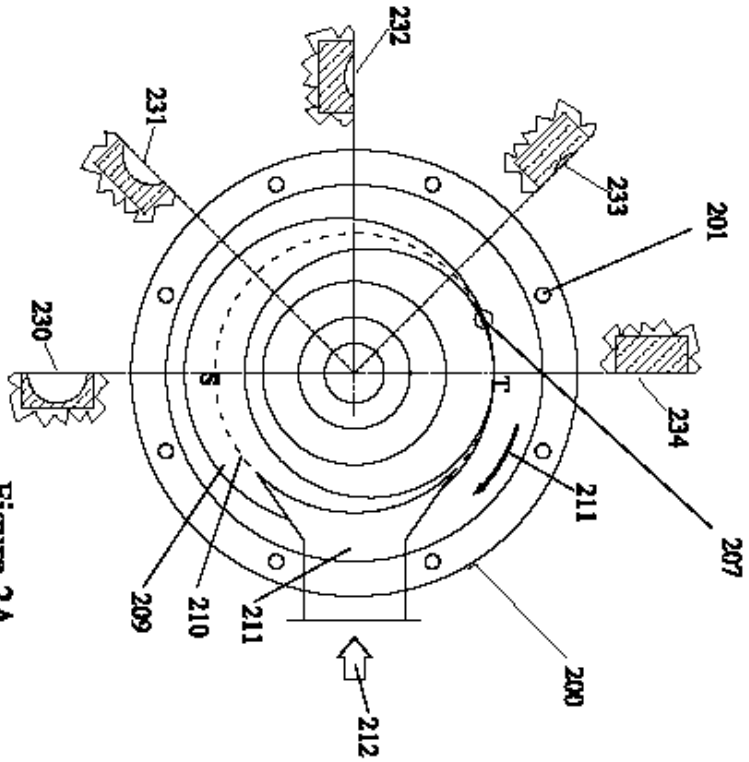

Figure-2A

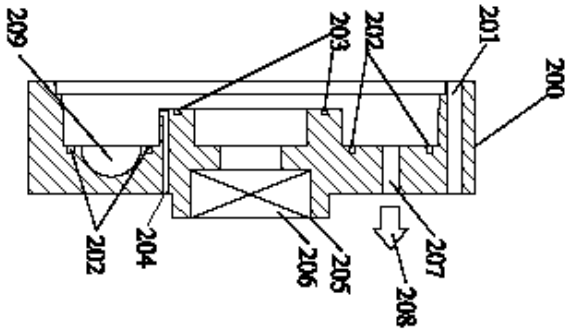

Figure-2B

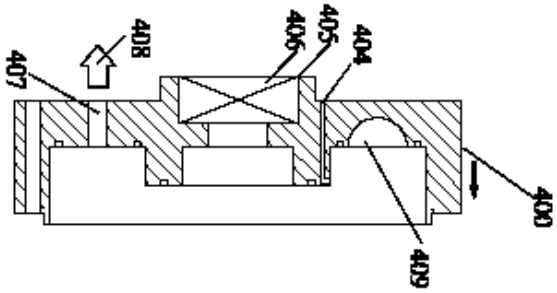

Figure-3A

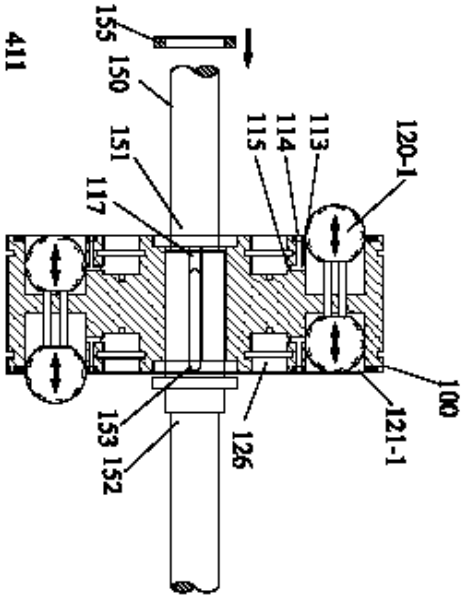

Figure-3B

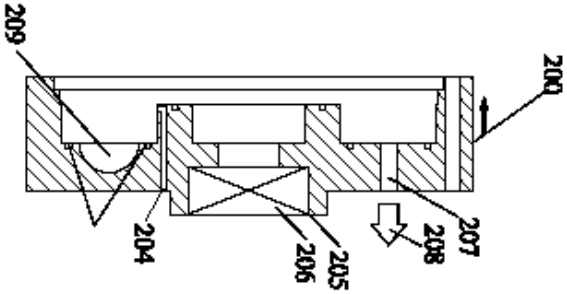

Figure-3C

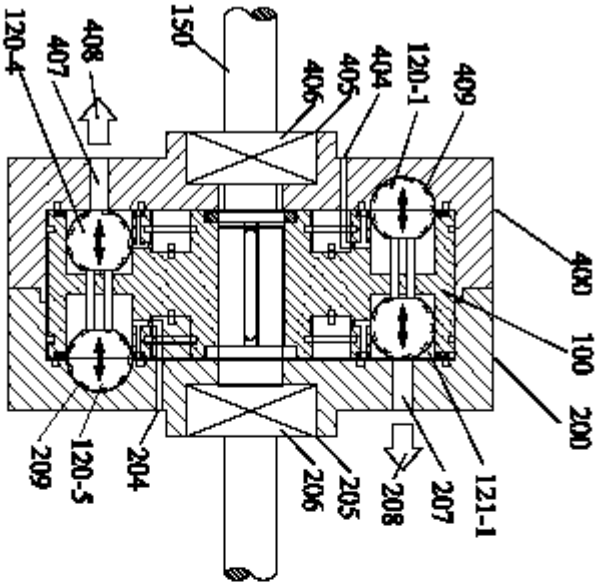

Figure-4A

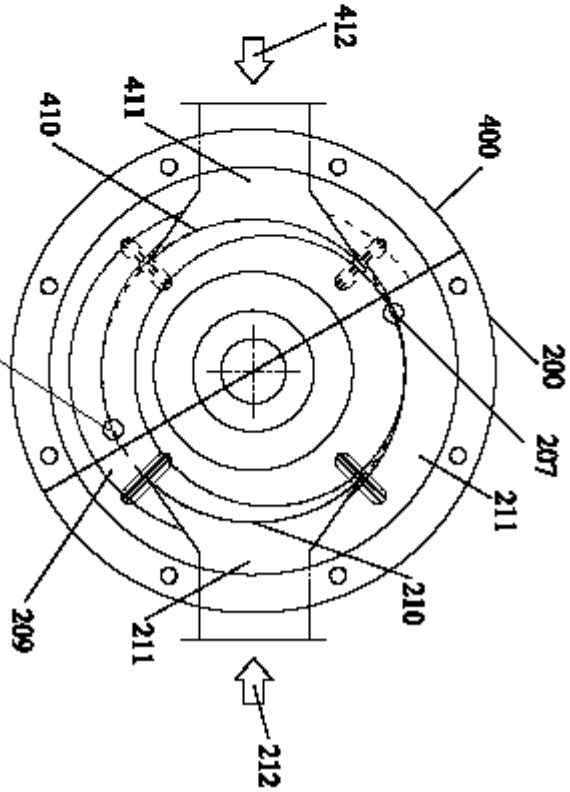

Figure-4B

FORM 3

THE PATENT ACT 1970
(39 OF 1970)
AND
The patent rules, 2003
STATEMENT AND UNDERTAKING UNDER SECTION 8
(See section 8; rule 12)

We

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602

Hereby declare:-
(i) That we have not made any this application for the same /substantially the same invention outside India.

Dated this 20th day September 2010

Signature

Ingole Vijay Tulshiram

To
The controller of patents,
The patent office,
At Mumbai

FORM 26

THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003

FORM OF AUTHORISATION OF A PATENT AGENT/ OR ANY PERSON IN A MATTER OR PROCEEDING UNDER THE ACT

[Section 127 and 132 and Rule 135]

We,

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout,camp,Amravati-444602
Ingole Ashutosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602
Ingole Paritosh Vijay	Indian	104 Ganediwal layout,camp,Amravati-444602

hereby authorize Swapnil J Gawande, Advocate and Patent Agent No. IN/PA 1587.of R-9 Harshnil,Eknath puram, nr yogakshem colony Amravati-444607,India to act on my behalf in connection with our patents, assignments, oppositions, rectifications, renewals and request that all notices, requisition and communication relating thereto may be sent to such person unless otherwise specified.

I hereby revoke all previous authorization, if any made, in respect of same matter or proceeding.

I hereby assent to the action already taken by the said person in the above matter.

Dated this 20th day September 2010

Name: Ingole Vijay Tulshiram

Ingole Ashutosh Vijay

Ingole Paritosh Vijay

To,
The Controller of Patents
The Patent Office
At Mumbai