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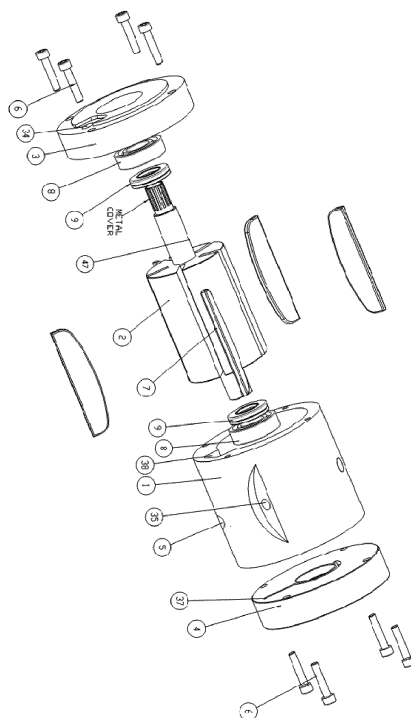
Remarks:
Amended claims in accordance with Rule 137(2)
EPC.

(54) **SUBMERSIBLE PUMP MOTOR THAT CAN WORK WITH COMPRESSED AIR**

(57) My invention is related with submersible pumps which use for agricultural irrigation can run with compressed air instead of only electric power

Thanks to my invention the submersible pump motor that can run with compressed air will not need directly electric power

1st LOOP ROOM



DRAWING 1/5

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Description

Technical Field:

[0001] My invention related with all farmers who do agricultural irrigation

Submersible pumps motors can run only with electric power; my invention is providing Submersible pumps to run only with compressed air, not directly with electric power.

Previous Technical Field:

[0002] As known agricultural irrigation in world -wide provide by submersible pumps use sole power option which is electrical motors. The submersible pump motor consumes serious rate of electric power. All farmers who are using submersible pumps must bear that high energy cost; burning of electric motor for any case or overhaul requirement by time cause extra expense and work loss for users.

[0003] The electrical motor of submersible pumps has working speed for 2950 rpm, that is also working speed for submersible pump as well. For increasing efficiency and decreasing consuming amperage of electric motor, the pump manufacturers need to use stainless steel made impeller fans because of light weight comparing casting type which can produce by limited manufacturers with high cost&sale pricing.

[0004] Stainless steel impeller fans facing scoring, damaging, balancing problems because of turning at sandy and stony ambient inside of deep well, against of these certain advantages has obligation to use because so light weight comparing casting fans. Using light weight offans provide less amperage consumption against casting fans.

Aim of my invention:

[0005] My invention came to life because of high rate of electric consumption for agricultural irrigation at South East Part of Turkey during summer time. The submersible pump which work with compressed air will decrease serious rate of electric consumption, will end all danger situations because of water and electric contact possibility, provide agricultural irrigation also for the fields that have no any arrangement for electrical network by diesel driven compressors, to consume so less energy and accordingly pay less energy cost, to save from maintenance and over haul costs of electric motor and electrical network parts.

[0006] The compressor which can turn either by diesel engine or electrical motor will produce compressed air, compressed air will turn my scouted air motor and air motor will turn the submersible pump. Submersible pump motor that can run with compressed air is not available in World wide.

As known by consuming same rate of power, piston com-

pressors can produce different pressures between 8-12 bar and screw type produce different pressures between 6-15 bar One bar pressure increases my scouted motor speed, by using same rate of power we can decrease or increase my air motor speed by changing compressor working pressure only, this is very important flexibility for user. The submersible pump that can work with compressed air with so less energy requirement comparing with standard electrical pump motors-will rotate the pump more speedy than 2950 rpm which will provide additional efficiency.

[0007] By this way using of stainless steel fan necessity will not be valid any more. I am considering by availability of submersible motors that can run more than 2950 rpm speed will also improve the pump technology for more efficiency by higher speeds

The new generation of pumps that can work high speed with my scouted air motor will be available in future, that is my own foresight.

My invention can also use for other machinery ranges like generators, compressors as well as for electrical cars beside of using for submersible pumps. My invention can use for power increase (turbo effect) for compressors, generators and electrical cars. Also my invention can use for cooling of coolers for compressors and generators also cooling of electrical car batteries

Explanation of Drawings

[0008] Submersible Pump motor that can work with compressed air systems showed as mentioned drawings:

- Assembled Form and top looking for explosion-Drawing 5/5
- General view- Drawing 4/5
- 1st loop room-Drawing 1/5
- 2nd loop room-Drawing 2/5
- 1st and 2nd loop rooms Cover and Body compressed air flow ways-Drawing 3/5

Explanation of references at drawings

General view(Drawing 4/5)

[0009]

- 30:Bottom cover, general case
- 25:General Case(Cylinder)
- 24:Shaft, connecting gear box shaft to pump shaft
- 32:Fixing screws ,fixing gear box to bottom cover
- 19:Planetary Type gear box ,Speed and Torque increaser /decreaser
- 23: Coupling connection, connecting of 2nd loop room shaft to gear box shaft
- 43:Fixing studs, for fixing 1st and 2nd loop rooms to general case
- 43A:Fixing studs, for fixing plastic cover to general

case

- 21:2nd loop room
- 20:1st loop room
- 27: Hose, carrying the compressed air from 1st loop room discharge port to 2nd loop room front cover service air inlet port
- 45: Air connection assembly, carrying the compressed air to 2nd loop room body air inlet port
- 22: Titanium coated 2 pcs of magnet group, for connecting 1st loop room shaft to 2nd loop room shaft, by this way 2nd loop room shaft can turn more speedy than 1st loop room shaft against connected to each other directly
- 42: Plastic Cover, for providing isolation to magnet group
- 44: Fixing screws, for fixing plastic cover
- 46: Main air pipe, for carriage compressed air to 1st and 2nd loop rooms
- 39: Air Connection assembly, carrying the compressed air to 1st loop room body air inlet port
- 33: Air Connection assembly, carrying the compressed air to 1st loop room front cover service air inlet port
- 39: Hose, carrying the compressed air to 1st loop room front cover service air inlet port
- 29: Discharge Hose, discharging used compressed air from 2nd loop room discharge port to out of general case
- 26: Up Cover, General Case
- 40: Compressed air outlet port
- 41: Compressed air inlet port

-1st loop room (Drawing 1/5)

[0010]

- 6: Fixing screws, for fixing front and bottom covers to general case
- 3: Front Cover
- 34: Service air inlet port, front cover
- 8: Bearing, provide wheel shaft easy movement in bottom cover housing
- 9: Seals, providing sealing for wheel at front and back covers
- 2: Slotted Wheel with shaft made from Kestamide material
- 47: Slotted Wheel shaft with metal head
- 7: Coal Fins, bottom side camber shaped located inside of each slot at kestamide made wheel
- 1: Body, 1st loop room
- 35: Air inlet, 1st loop room body side
- 5: Air discharge port, 1st loop room
- 4: Back cover
- 37: Compressed air carriage channels
- 38: Compressed air storage area

2nd loop room (Drawing 2/5)

[0011]

- 5 15: Screws, fixing front and back covers to body
- 12: Front Cover
- 36: Air inlet port, front cover
- 17: Bearing, moving well of Wheel shafts in front and back covers
- 10 18: Seal, providing isolation at front and back covers
- 11: Slotted Wheel made by kestamide material with 2 shafts
- 48: Back side shaft, with metal head
- 49: Front side shaft
- 15 16: Coal Fins, bottom side camber shaped located inside of each slot of kestamide made wheel
- 10: Body, 2nd loop room
- 14: Air inlet, 2nd loop room body
- 45: Air discharge, 2nd loop room
- 20 13: Back cover
- 37: Compressed air going channels
- 38: Compressed air storage area

1st and 2nd loop room front -back covers and body compressed air inlet and flow (Drawing 3/5)

[0012]

- 30 34&36: Service Air Inlet Port at 1st and 2nd loop room front cover
- 37: Channel for carrying of compressed air under the coal fins
- 38: Compressed air storage area at front and back cover for lifting coal fins
- 35 5&14: Air Inlet Port at 1st and 2nd loop room body
- 3-14&12-13: Front and back covers of 1st and 2nd loop rooms

[0013] The submersible pump that work with compressed air build up from 3 sections of 1st loop room(20), 2nd loop room(21) and speed and torque increaser/decreaser planetary type gear box(19). The three sections located inside of general case(25) for protecting from outside effects. 1st loop room slotted Wheel metal head shaft (47) has connected to 2nd loop room slotted Wheel metal head shaft(48) by titanium coated 2 pcs of magnet group (22). Two magnets stick each other and two wheels shafts metal cover well also two magnets can freely turn inside while stucked together, by this way 2nd loop room Wheel(48) while rotating same speed with 1st loop room shaft because of direct connection will start to rotate more faster by entering additional compressed air pressure from body inlet port(14). Shortly two shafts mills against connecting each other directly one shaft can rotate more speedy than other thanks to Titanium coated Magnet group (22) which is located inside but not touch of plastic cover (42) for magnetic isolation.

1st loop room(20) and 2nd loop room(21) made from in-

got or casting aluminium with egg shaped.

[0014] The submersible pumps diameters are variable depending as per capacities, the submersible pump motor that work with compressed air motor diameters are also variable as per submersible pump diameters. Loop room quantities can be more than 2 units as per submersible pump size; all loop rooms after 1st loop room(20) will connect with same method like 2nd loop room(21) and air inlet and outlet connections perform as per 2nd loop room(21) style.

[0015] There are two compressed air storage points (38) at up and down edges of each loop room wall which use storing of compressed air for lifting of coal fins. 1st loop room(20) have front(3) and back(4) covers which fixed with screws(6) to body.

Front cover (3) has service air inlet port(34). The compressed air that entering from this port accumulate into air storage areas(38) which located at two edges, accordingly compressed air pass from the carrying channels(37) which made on front and back covers(3-4). The compressed air starts to fill under of each coal fin(7) from back and front sides. By compressed air filling each coal fin (7) move up and stick well to loop room body(1). In the same time the compressed air that is entering from body air inlet port(35) will push the coil fins(7) that already stuck well to room body(1), the push will rotate the slotted wheel(2) naturally slotted Wheel shaft(47) as well. The compressed air that lift and pushed the coil fins(7) move out from air discharge port (5) which located at body (1) follow hose connection(27) goes to 2nd loop room front cover service air inlet port(36). Compressed air which enters from service air inlet port(36) accumulate in to air storage area(38) accordingly move to air carrying channels (37) which located at front cover(12) and back cover(13). The slotted Wheel with two shafts (11), made from kestamide which located inside of 2nd loop room (21) has already turned and coil fins(16) already rised up thanks to back side shaft (48) connection with 1st loop room shaft(47) by titanium plated magnet group(22); at that time compressed air fill to each slot from front and back sides and coil fins(16) stick more well to loop body (10). The compressed air that is entering from compressed air inlet port(14) located on body (2) of 2nd loop room push the coil fins(16) that have stuck well to body wall that provide more faster turn for slotted Wheel (11) as well as two shafts(48-49) which were already turning. The compressed air that pushed coil fins(16) move out from discharge port(29) carry out from general case(25) 2nd loop room(21) use 1st loop room(20) discharged compressed air as service air, the additional compressed air pressure entering from body inlet point(14) increase speed of turning system which create turbo effect.

[0016] 2nd loop room Wheel(11) front shaft(49) forward the rotation with coupling connection(23) to planetary type gear box(19) which is ready available at market use decrease or increase of torque and speed.

[0017] The rotation which arrived to gear box(19) by coupling connection(24) will forward the move to sub-

mersible pump shaft.

Industrial applicability

5 **[0018]** The all parts that are subject my invention can produce well at machinery industry.

Claims

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1. The invention is submersible pump motor that work with compressed which consist of 1st loop room(20), 2nd loop room(21) and planetary type gear box(19) located inside of general case(25)

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2. The 2nd loop room(21) at 1st volition is speed increaser which take used compressed air from 1st loop room(20) to front cover service air port(36) and also take compressed air from body inlet port(14)

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3. The 1st loop room(20) and 2nd loop room(21) at 1st volition are speed provider which have properties of;

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- Front cover service air inlet ports (34)-(36), body air inlet ports (5)-(14)

- Slotted Wheels made with Kestamide (2)-(11)

- Shafts end covered with metal (47)-(48)

- Bottom side camber shaped coil fins(7),(16)

- Air transportation channel(37) use lifting of coil fins and air storage unit(38)

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4. The 1st loop room(20) and 2nd loop room(21) at 1st volition connected each other with titanium plated 2 pcs of magnets group(22) which provide different turn speed for both shafts against direct connection to each other.

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5. The 1st loop room(20) and 2nd loop room(22) at 1st volition fixed with fixing aparats (43) which connect both loop rooms(20)-(21) to general case (25)

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6. The 2nd loop room(21) at 1st volition is speed increaser which provide to use at different pump types more than one with same connection style for increasing either speed or torque.

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7. The 1st loop room (20) and 2nd loop room body air inlet at 1st volition receive compressed air by main air pipe(14) which provide constant compressed air supply without any pressure drop

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Amended claims in accordance with Rule 137(2) EPC.

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1. A submersible pump motor that run with compressed air(1A) comprising general case(25) with compressed air inlet and outlet ports(40-41) having main

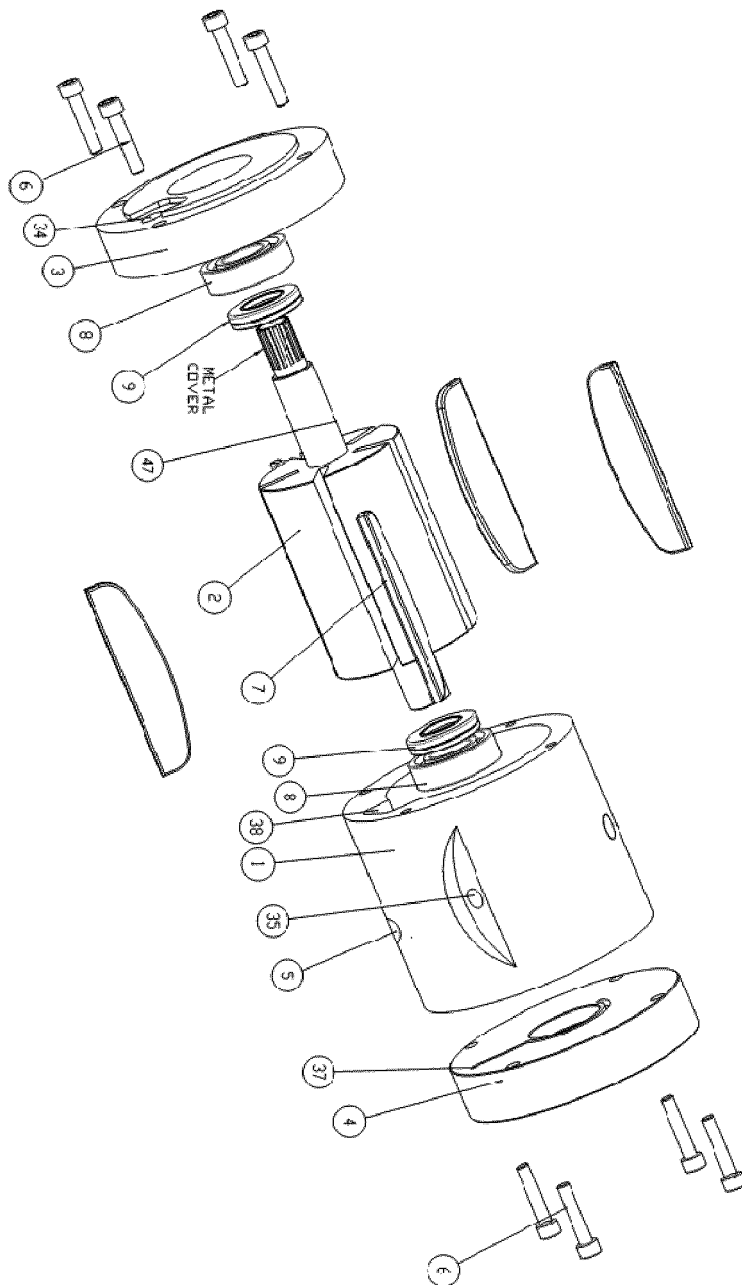
air delivery pipe (46) for supplying compressed air to 1st and 2nd chambers (20-21), exhaust air discharges from 2nd chamber discharge port (45) to out of general case (25), for admitting compressed air to said first and second chambers each of made ingot or casting aluminium with egg shaped body (1-10) having service air inlet ports (34-36) at front covers (3-12) and compressed air carriage channels (37) at said front cover and back covers (4-13), compressed air storage area (38) and body air inlet ports (35-14) at body walls, respectively Slotted Rotors made with polyamide (2-11) disposed within said first and second chambers and a plurality of coal made vanes with herringbone shapely (7-16) slidably moveable inside of each slot, said rotors connected each other by Titanium coated 2 pcs of magnet group (22) from shafts (47-48) - for allowing said second chamber rotor turn at different speed than first chamber rotor, -transmit created speed to planetary type gear box (19) for converting some rate of speed to torque and forward both speed and torque to submersible pump, system parts said 1st and 2nd chambers and plastic cover (42) being fixed by studs (43-43A) to said general case.

2. A submersible pump motor that run with compressed air according to claim 1, wherein said polyamide made rotors have two types, first type has one shaft (2) with metal housing (47) for magnet housing at end for 1st chamber (20) and second shaft have two shafts (11), back shaft has metal housing (48) for magnet housing at end for 2nd chamber (21)
3. A submersible pump motor that run with compressed air according to claim 1 or 2, wherein said 1st chamber and 2nd chamber front covers (3-12) and back covers (4-13) have air carriage channels (37) at inside surfaces
4. A submersible pump motor that run with compressed air according to claim 1 or 2, wherein said 1st chamber and 2nd chamber front covers have service air inlet ports (34-36) and body inlet ports (5-14)
5. A submersible pump motor that run with compressed air according to claim 1 or any one of the preceding claims wherein said 2nd chamber quantities can be more numbers for increasing output power with same construction and connection method like said 2nd chamber
6. A submersible pump motor that run with compressed air according to any one of the preceding claims, wherein said magnets located in Plastic Cover (42) for magnetic isolation, fixed to said general case with fixing studs (43-43A)
7. A submersible pump motor that run with compressed

air according to claim 1 or any one of preceding claims, wherein said two chambers rotors connect each other by titanium coated two pieces of magnets (22) each magnet located in metal housing of said chambers rotors shaft

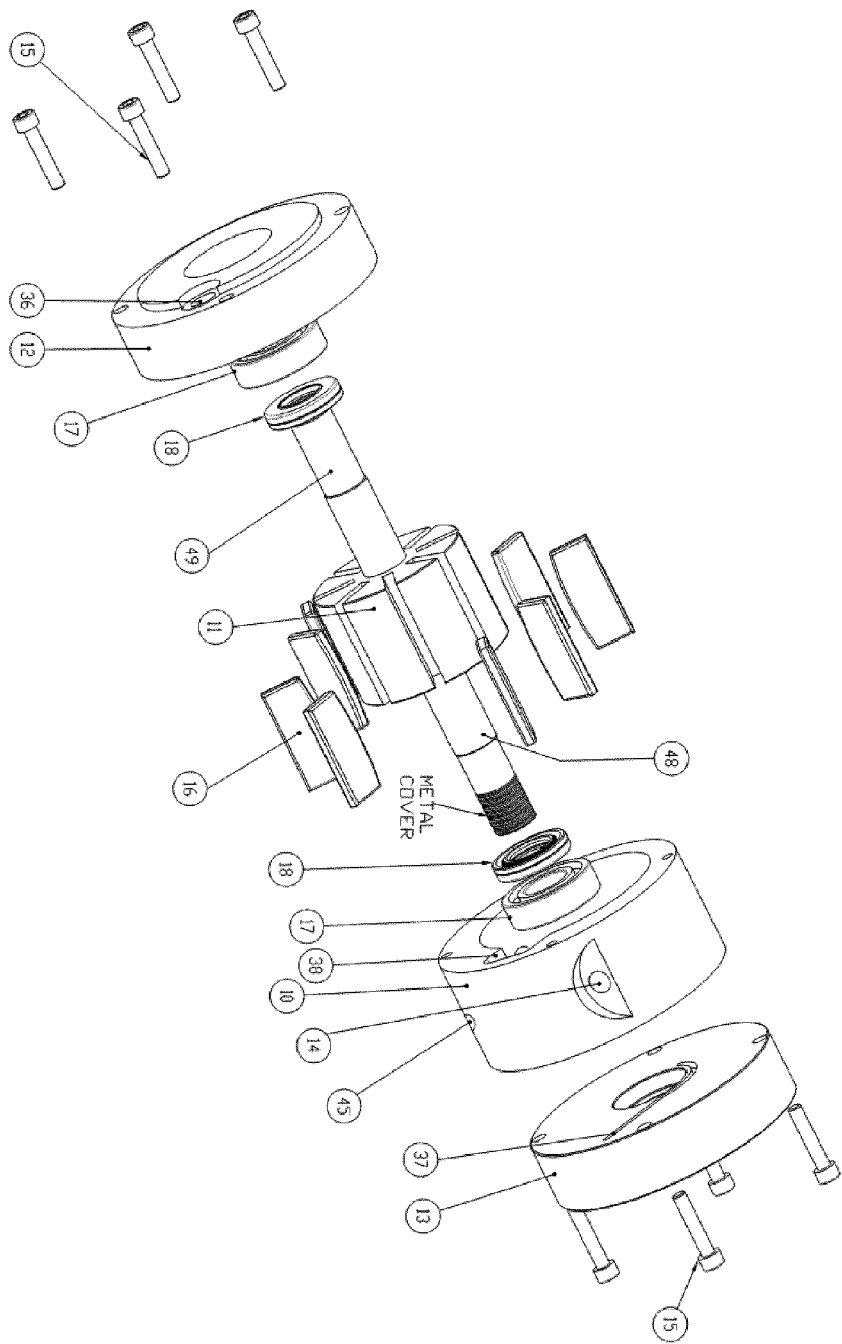
8. A submersible pump motor that run with compressed air according to any one of the preceding claims where in said 1st chamber exhaust air hose connection carry the exhaust compressed air from 1st chamber discharge port (5) to said 2nd chamber front cover service air inlet port (27)
9. A submersible pump motor that run with compressed air according to claim 1 or any one of preceding claims, wherein said 1st chamber and 2nd chamber consist two air storage areas (38) at up and down side of said chamber walls

1st LOOP ROOM



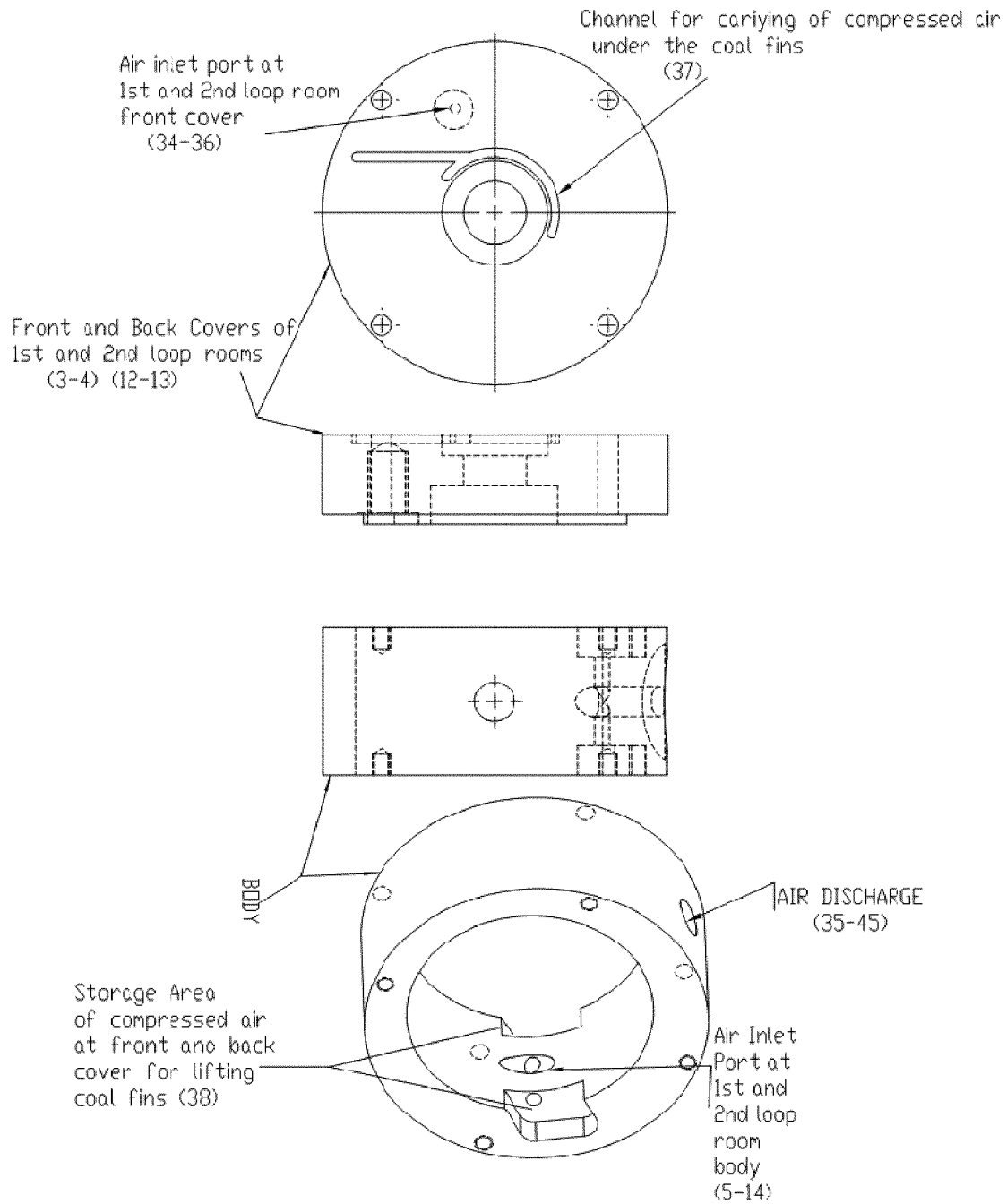
DRAWING 1/5

2nd LOOP ROOM

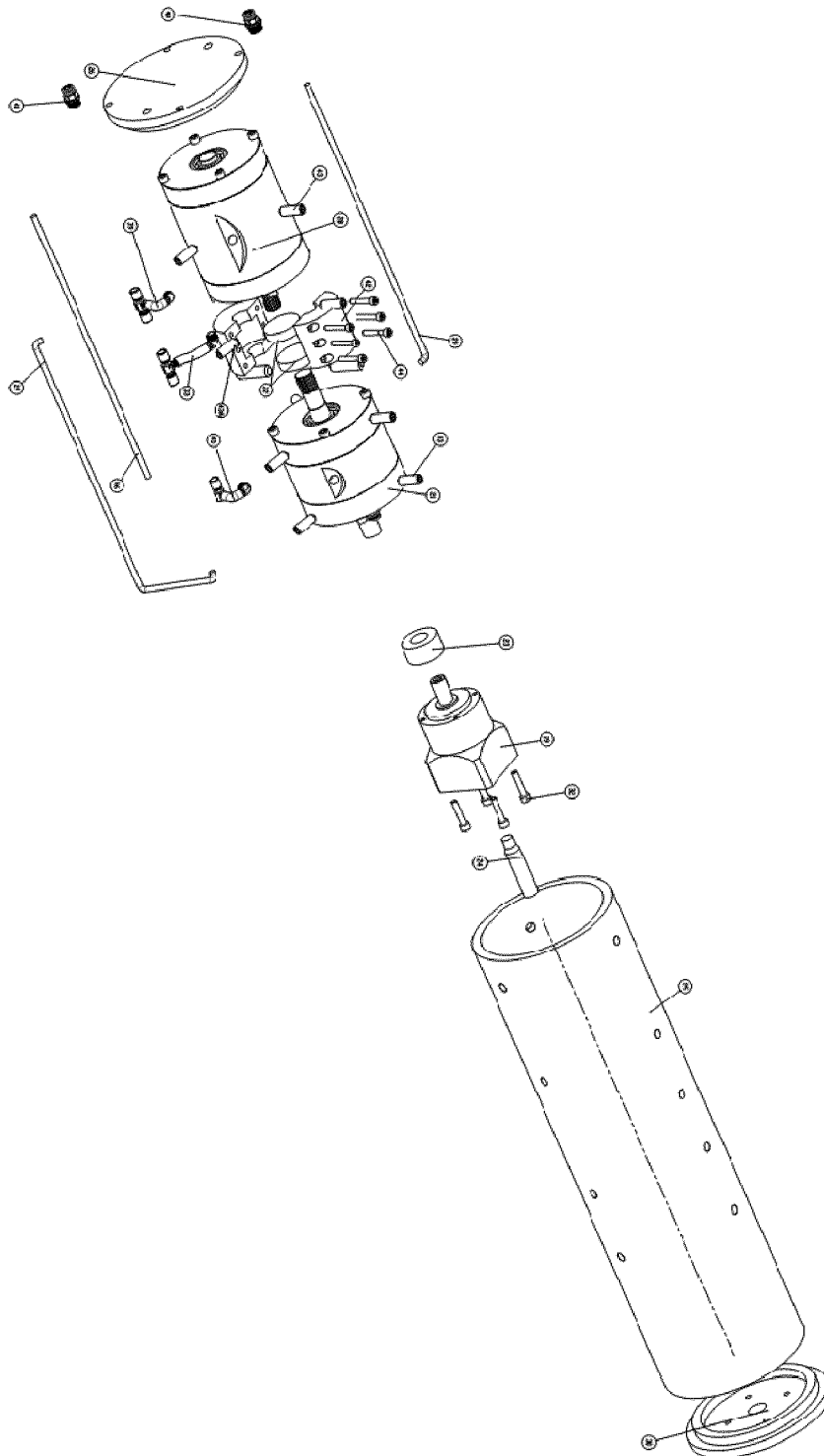


DRAWING 2/5

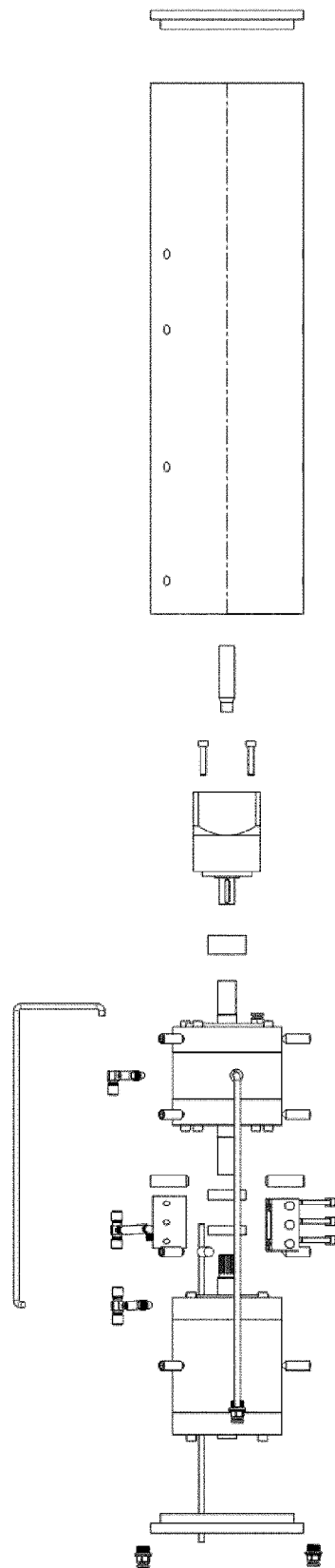
1st and 2nd Loop Room
Front-Back Covers and Body
Compressed Air inlet and Flow



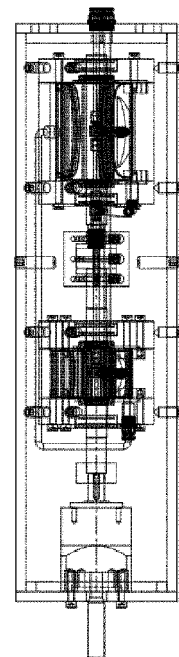
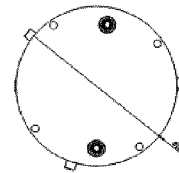
GENERAL VIEW



TOP LOOKING FOR EXPLOSION DRAWING



ASSEMBLED FORM



DRAWING 5/5



EUROPEAN SEARCH REPORT

Application Number
EP 17 20 1505

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 May 2018	Examiner Bocage, Stéphane
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



EUROPEAN SEARCH REPORT

Application Number
EP 17 20 1505

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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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