Title (en)

Through-flow arrangement for the volute inlet of a radial turbine.

Title (de)

Durchflussregelung für den Spiralgehäuse-einlass einer Radialturbine.

Title (fr)

ContrÔle d'éntrée de la volute d'une turbine radiale.

Publication

EP 0086466 A1 19830824 (DE)

Application

EP 83101306 A 19830211

Priority

US 34928382 A 19820216

Abstract (en)

1. An exhaust gas turbine with a variable flow, in particular for driving turbochargers of internal combustion engines, comprising a rotor (28) which is rotatable about an axis and which has a multiplicity of rotor blades (34) which are arranged at peripheral spacings from each other, a turbine casing (13) in which the rotor is rotatable and which has an outlet (32) which is coaxial with respect to the rotor, a volute casing portion (16) and a curved intake portion (14) with an inlet (22) arranged at a spacing from the axis, a partitioning wall which forms an outer and an inner flow path (56, 54) in the intake portion (14) and in the volute casing portion (16), which is curved within the volute casing portion (16) in the same direction as said volute casing portion and which is so arranged in the volute casing portion (16) that there is formed a fixed guide surface tip (52) which lies substantially tangentially at the outer periphery of the rotor (22) and which keeps the outer and inner flow paths separate and the inner flow path (54), within the volute casing portion (16) to directly to the periphery of the rotor (28), is of a cross-sectional area which decreases as said flow path (54) increasingly approaches the rotor, and a valve-like member (36) with actuating means for varying the intake flow cross-section of one of the two flow paths in the intake portion (14), characterised in that the intake portion (14) which extends between its connection (18) to the exhaust gas manifold of the internal combustion engine and the connection to the volute casing portion (16) and the part of the partitioning wall (50) which is disposed in the intake portion (14) are curved in the same direction as the volute casing portion (16), that the partitioning wall (50) extends in the volute casing portion (16) in such a way that the end thereof itself forms the guide surface tip (52) which lies substantially tangentially at the periphery of the rotor (28) and the cross-sectional areas of the outer flow path (56) as well as those of the inner flow path (54), within the volute casing to directly to the periphery of the rotor (28), progressively decrease in the direction in which the flow path increasingly approaches the rotor (28), and that the valve-like member (36) is so associated with the inner flow path (54) that upon movement of the valve-like member (36) towards the position of closing off the inner flow path (54) both the average radius of curvature of the mass flow and the flow speed of the exhaust gases increase.

Abstract (de)

Es ist eine Turbine mit verbesserter variabler Strömung vorgesehen, dessen Turbinengehäuse einen gekrümmten Eingangsabschnitt (14) und ein Spiralgehäuseabschnitt (16) auf weist. Der gekrümmte Gehäuseabschnitt (14) umfaßt einen Einlaß an einem Ende und ist mit dem anderen Ende mit dem Spiralgehäuseabschnitt (16) verbunden. Innerhalb des Spiralgehäuseabschnittes (16) ist der Turbinenrotor (28) angeordnet, dessen Auslaß (32) koaxial mit der zentralen Achse des Spiralgehäuses vorgesehen ist. Am Einlaß (22) des gekrümmten Abschnittes (14) ist ein Steuerventii (36) zur Regulierung der Strömung der Abgase durch das Gehäuse vorgesehen. Von dem Steuerventil (36) aus erstreckt sich nach innen eine Trennwand (50), welche das Gehäuse in innere und äußere Kanäle unterteilt. Die Trennwand (50) ist so ausgebildet, daß die Querscnnittsströmungsfläche jedes Kanals innerhalb des Spiralgehäuseabschnittes bei Annäherung an den Turbinenrotor (28) abnimmt. Die neue Turbinenanordnung ermöglicht den Betrieb eines Turboladers mit großerer Effektivitat über den gesamten Arbeitsbereich einer Brennkraftmaschine.

IPC 1-7

F01D 9/02; F01D 17/14

IPC 8 full level

F02B 37/12 (2006.01); **F01D 9/02** (2006.01); **F01D 17/14** (2006.01); **F02B 37/22** (2006.01); **F02B 39/00** (2006.01)

CPC (source: EP)

F01D 9/026 (2013.01); **F01D 17/146** (2013.01)

Citation (search report)

- [XD] US 4177006 A 19791204 - NANCARROW JAMES H [US]
- [A] GB 2057063 A 19810325 - DIBELIUS G
- [A] FR 2465069 A1 19810320 - ISHIKAWAJIMA HARIMA HEAVY IND [JP]
- [A] FR 2210220 A5 19740705 - WOOLLENWEBER WILLIAM [DE]
- [A] FR 2320440 A1 19770304 - ROTO MASTER [US]
- [A] CH 239435 A 19451015 - BUECHI ALFRED [CH]
- [P] ENGINEERING MATERIALS AND DESIGN, November 1982, Industrial Press, London, GB.

Cited by

EP1939427A3; CN103557069A; EP1939427A2; US9932843B2; US10267318B2; WO2015143261A1; WO2011067259A1; WO2009129895A1

Designated contracting state (EPC)

AT BE CH DE FR GB IT LI SE

DOCDB simple family (publication)

EP 0086466 A1 19830824; **EP 0086466 B1 19870527**; AT E27474 T1 19870615; AU 550503 B2 19860320; AU 9165882 A 19830825; BR 8300621 A 19831108; CA 1206419 A 19860624; DE 3371804 D1 19870702; ES 519793 A0 19840201; ES 8402637 A1 19840201; JP S58150028 A 19830906; MX 156452 A 19880823; ZA 831015 B 19840926

DOCDB simple family (application)

EP 83101306 A 19830211; AT 83101306 T 19830211; AU 9165882 A 19821220; BR 8300621 A 19830208; CA 421254 A 19830209; DE 3371804 T 19830211; ES 519793 A 19830215; JP 2267683 A 19830214; MX 19588883 A 19830111; ZA 831015 A 19830215