

Title (en)  
MULTISTAGE ROOTS PUMP AND ITS ASSEMBLY METHOD

Publication  
**EP 0368124 B1 19930224 (FR)**

Application  
**EP 89120181 A 19891031**

Priority  
FR 8814493 A 19881107

Abstract (en)  
[origin: JPH02157489A] PURPOSE: To achieve high vacuum by constituting a side blade and a stator crown as mutually stacked separate members and constituting compression robes with bodies and flanges, and fixing the flanges with screws arranged axially in the bodies. CONSTITUTION: A stator is constituted by an alternating succession of side blades 22 and stator crowns 21 until the side blade of the upper distal end. Shafts 24, 25 comprise compression robes 28 in respective chambers 20. The robe comprises a body 29 and a flange 30. The flange 30 is operated to compress a unit of two conical rings 32 and 33 via a washer 31 to fix a shaft to the robe. Compression is effected by using four clamping screws 34 inserted through the smooth bores of the flanges 30 and threaded bores 35 of the bodies 29. The ring 33 penetrates into the ring 32. When the screw 34 is tightened, the ring 33 is shrunk radially to be fixed to the shaft of the robe 28 securely. Moreover, two smooth blind gage bores 36 are provided for determining the position of each robe 28.

IPC 1-7  
**F04C 23/00**; **F04C 29/00**

IPC 8 full level  
**F04C 18/18** (2006.01); **F01C 21/10** (2006.01); **F04C 2/08** (2006.01); **F04C 18/08** (2006.01); **F04C 23/00** (2006.01); **F04C 29/00** (2006.01)

CPC (source: EP US)  
**F01C 21/102** (2013.01 - EP US); **F04C 23/001** (2013.01 - EP US); **F04C 2230/60** (2013.01 - EP US); **F05B 2230/60** (2013.01 - EP US); **Y10T 29/49236** (2015.01 - EP US); **Y10T 29/49242** (2015.01 - EP US); **Y10T 403/7056** (2015.01 - EP US); **Y10T 403/7069** (2015.01 - EP US)

Cited by  
DE102010051316A1; EP2461040A1

Designated contracting state (EPC)  
AT BE CH DE ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)  
**EP 0368124 A1 19900516**; **EP 0368124 B1 19930224**; AT E86010 T1 19930315; DE 68905027 D1 19930401; DE 68905027 T2 19930617; ES 2039805 T3 19931001; FR 2638786 A1 19900511; FR 2638786 B1 19901207; JP H02157489 A 19900618; JP H0631626 B2 19940427; RU 1834986 C 19930815; US 5013227 A 19910507

DOCDB simple family (application)  
**EP 89120181 A 19891031**; AT 89120181 T 19891031; DE 68905027 T 19891031; ES 89120181 T 19891031; FR 8814493 A 19881107; JP 28983789 A 19891107; SU 4742355 A 19891104; US 43404489 A 19891107