

## F01D

**NON-POSITIVE DISPLACEMENT MACHINES OR ENGINES, e.g. STEAM TURBINES (machines or engines for liquids F03; non-positive displacement pumps F04D)**

### Definition statement

*This subclass/group covers:*

- Non-positive-displacement engines for elastic fluids, e.g. steam turbines,
- Non-positive-displacement engines for liquids and elastic fluids,
- Non-positive-displacement machines for elastic fluids,
- Non-positive-displacement machines for liquids and elastic fluids.

### References relevant to classification in this subclass

*This subclass/group does not cover:*

Machines or engines for liquids	F03
Non-positive-displacement pumps	<a href="#">F04D</a>

### Special rules of classification within this subclass

In this subclass the indexing scheme [F05D](#) is used as follows:

[F05D 2200/00](#): mathematical features

[F05D 2210/00](#): working fluid

[F05D 2220/00](#): application

[F05D 2230/00](#): manufacture

[F05D 2240/00](#): components

[F05D 2250/00](#): geometry

[F05D 2260/00](#): function

[F05D 2270/00](#): control

[F05D 2300/00](#): materials

## F01D 1/00

**Non-positive-displacement machines or engines, e.g. steam turbines (with working-fluid flows in opposite axial directions for balancing axial thrust F01D3/02; with other than pure rotation F01D23/00 ; turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor F01K)**

**Definition statement**

*This subclass/group covers:*

Non-positive-displacement machines or engines, e.g. steam turbines: i.e. machine or engine that uses an impeller or propeller and through which fluid is moved

**Relationship between large subject matter areas**

Machines or engines with working-fluid flows in opposite axial directions for balancing axial thrust [F01D 3/02](#), with other than pure rotation [F01D 23/00](#), turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor [F01K](#)

**References relevant to classification in this group**

*This subclass/group does not cover:*

Machines or engines with other than pure rotation	<a href="#">F01D 23/00</a>
Machines or engines with working-fluid flows in opposite axial directions for balancing axial thrust	<a href="#">F01D 3/02</a>
Turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor	<a href="#">F01K</a>

**F01D 1/02**

with stationary working-fluid guiding means and bladed or like rotor, [N: e.g. multi-bladed impulse steam turbines] (F01D1/24 takes precedence; without stationary working-fluid guiding means F01D1/18 )

**References relevant to classification in this group**

*This subclass/group does not cover:*

Machines or engines without stationary working-fluid guiding means	<a href="#">F01D 1/18</a>
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### **Special rules of classification within this group**

[F01D 1/24](#) takes precedence

### **F01D 1/32**

**with pressure velocity transformation exclusively in rotor, e.g. the rotor rotating under the influence of jets issuing from the rotor, [N: e.g. Heron turbines (the working fluid being a combustion products F02C3/165 ; jet propulsion plants per se F02K)]**

#### **Definition statement:**

*This subclass/group covers:*

This sub group covers aspects of working fluid being guided through a rotor construction such that the action of the expelled working fluid jet creates a reaction on the rotor, i.e. a turning motion is induced upon the rotor

### **References relevant to classification in this group**

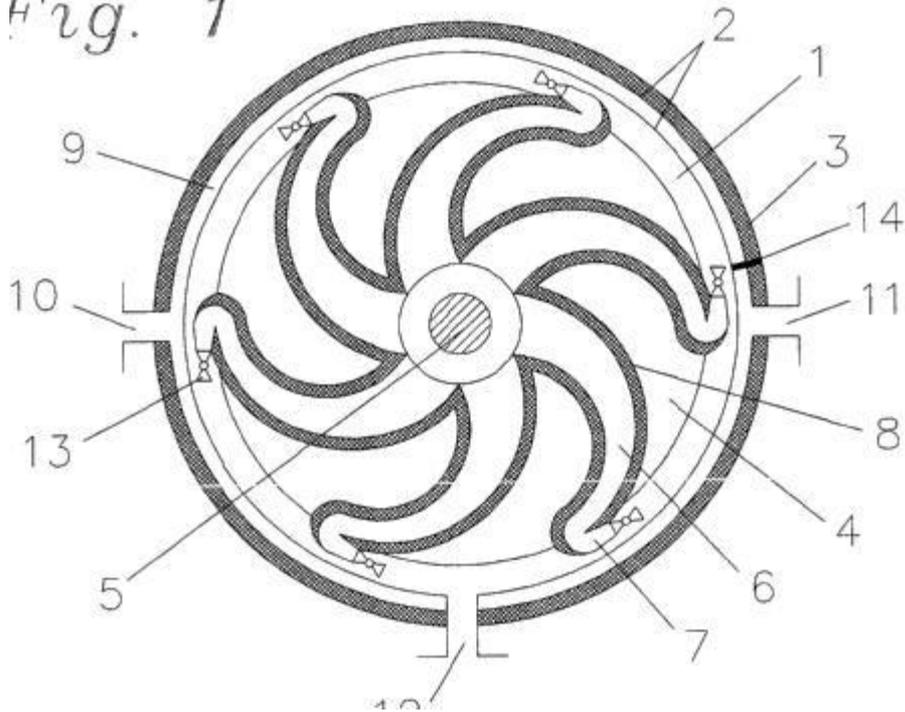
*This subclass/group does not cover:*

Jet propulsion plants per se	<a href="#">F02K</a>
The working fluid being a combustion product	<a href="#">F03C 3/16B</a>

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 1/32](#)

Fig. 1



taken from DE102009005872

## **F01D 1/36**

**using fluid friction**

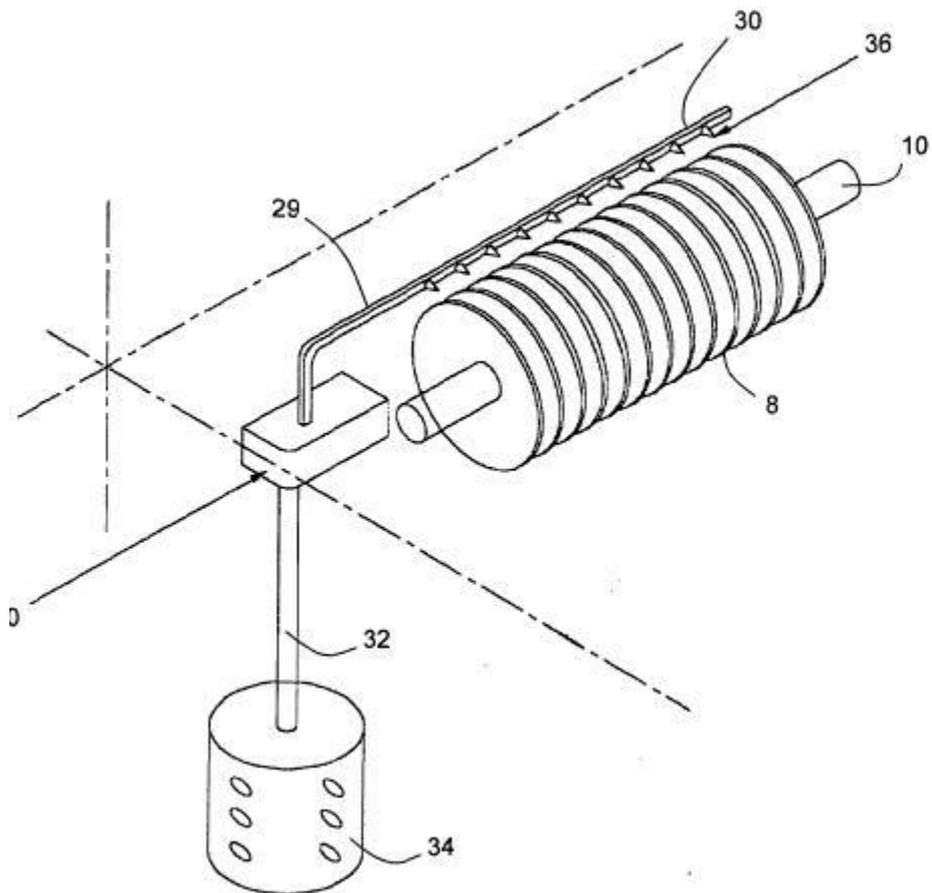
### **Definition statement:**

*This subclass/group covers:*

this sub group covers aspects of extraction power from working fluid by making use of the viscous forces within the fluid, usually by the provision of a stack of closely arranged plates through which the working fluid is forced, such as e.g. a Tesla turbine

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 1/36](#)



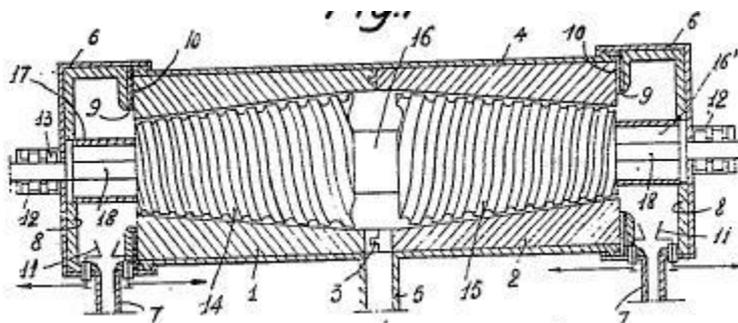
taken from WO2009150427

## F01D 1/38

of the screw type

**Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 1/38](#)



taken from FR937311

## F01D 3/00

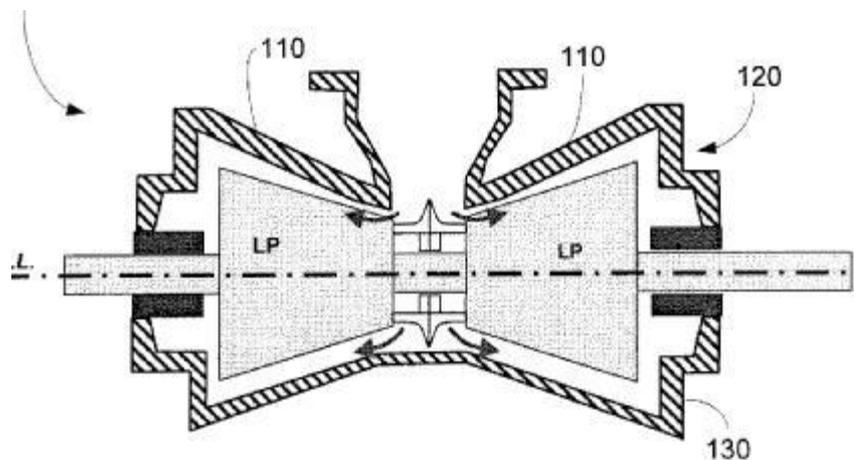
**Machines or engines with axial-thrust balancing effected by working-fluid**

### **F01D 3/02**

**characterised by having one fluid flow in one axial direction and another fluid flow in the opposite direction**

#### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 3/02](#)



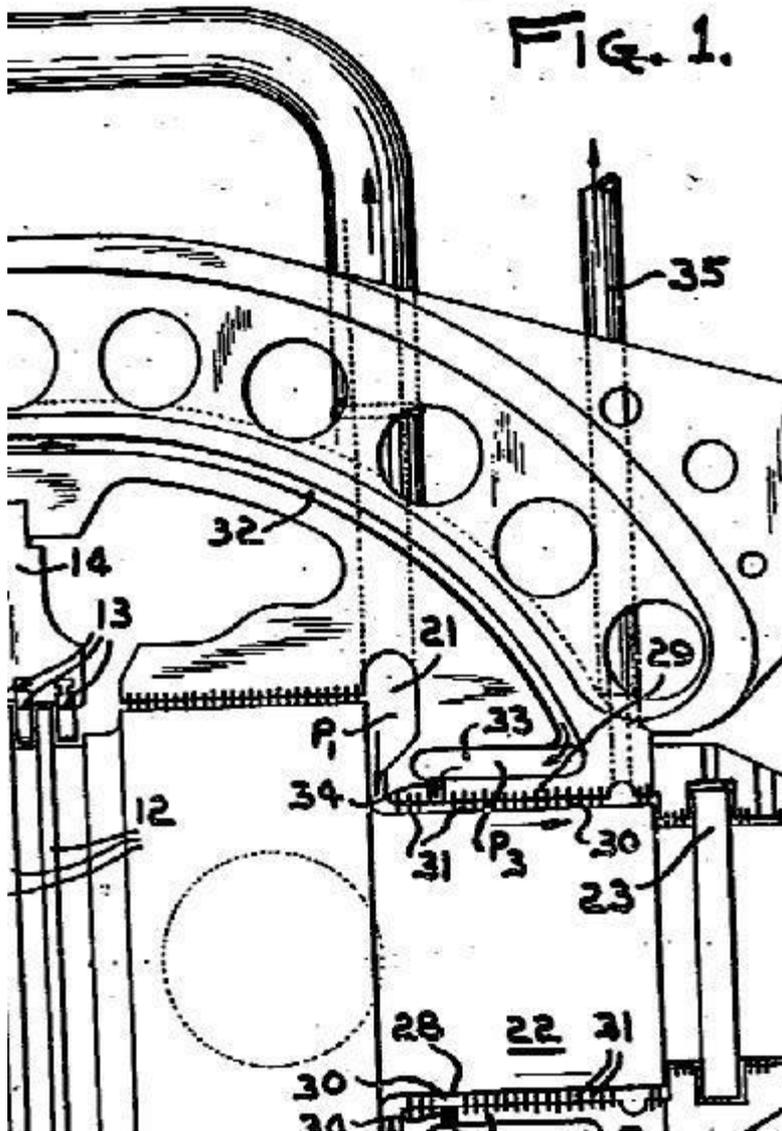
taken from FR937311

### **F01D 3/04**

**Axial thrust being compensated by thrust-balancing dummy piston or the like**

#### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 3/04](#)



taken from US2326112

## F01D 5/00

**Blades; Blade-carrying members; (nozzle boxes F01D9/02); Heating, heat-insulating, cooling or anti-vibration means on the blades or the members [N: special arrangements in rotors dealing with breaking off of part thereof F01D21/045 ]**

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Nozzle boxes	<a href="#">F01D 9/02</a>
Special arrangements in rotors dealing with breaking off of part	<a href="#">F01D 21/045</a>

thereof	
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## F01D 5/005

[N: Repairing methods or devices]

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Maintenance management and planing of maintenance routines	<a href="#">G05B 23/00</a>
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### Special rules of classification within this group

Turbine blade repair related document should also be circulated to [B23P 5/00](#)

## F01D 5/021

[N: for flow machines or engines with only one axial stage (for more than one stage F01D5/06 )]

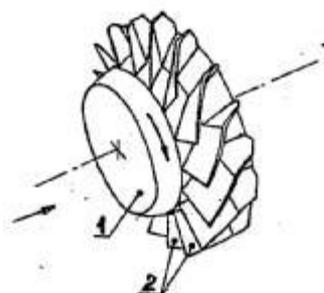
### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

For more than one stage	<a href="#">F01D 5/06</a>
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### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/021](#)



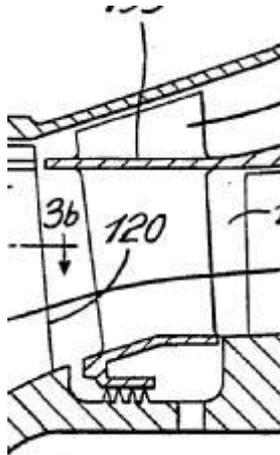
taken from GB944166

## F01D 5/022

[N: with concentric rows of axial blades]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/022](#)



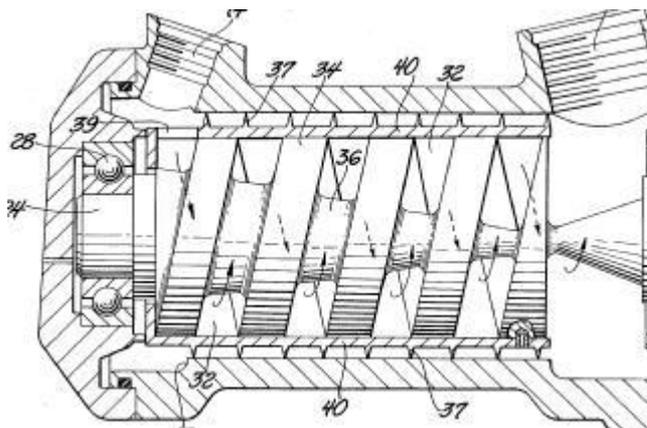
taken from US6578351

## F01D 5/023

[N: of the screw type]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/023](#)



taken from US4500254

## F01D 5/025

**[N: Fixing blade carrying members on shafts (attachment of a member on a shaft in general F16D1/06; for non-positive displacement pumps F04D29/00 )]**

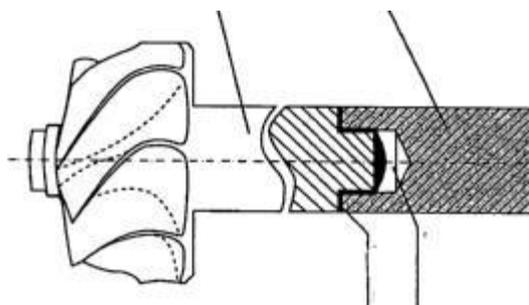
### **Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Attachment of a member on a shaft in general	<a href="#">F16D 1/06</a>
For non-positive displacement pumps	<a href="#">F04D 29/00</a>

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/025](#)



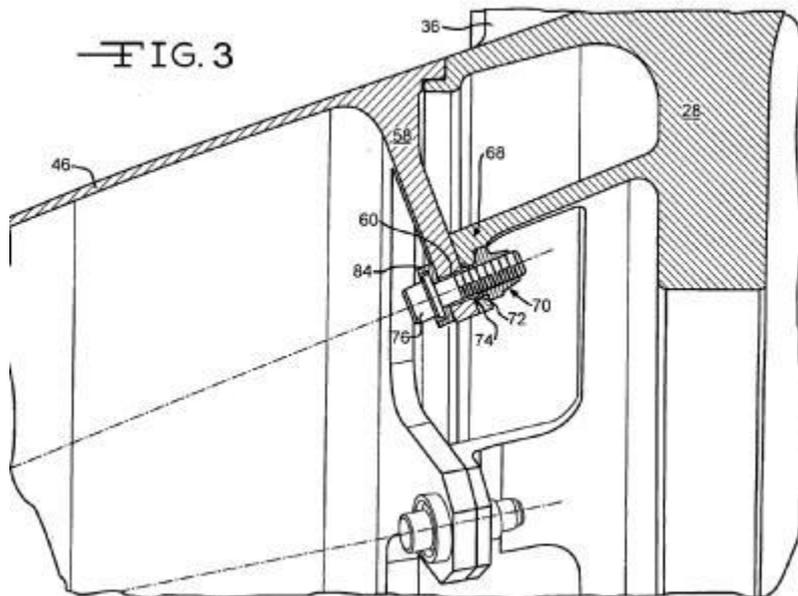
taken from US2010297468

### **F01D 5/026**

**[N: Shaft to shaft connections]**

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/026](#)



taken from US2010226786

## F01D 5/028

[N: the rotor disc being formed of sheet laminae (rotor blade aggregates of unitary construction F01D5/34 )]

### Definition statement:

*This subclass/group covers:*

This sub group covers:

Bladed disks (BLISKS) or other integrally manufactured rotor and disc arrangements, e.g. machined from a billet, manufactured by composite materials or manufactured individually and finally joined to a non separable unit, e.g. by friction welding

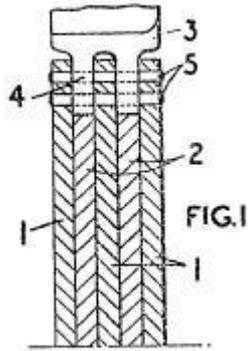
### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Rotor blade aggregates of unitary construction	<a href="#">F01D 5/34</a>
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### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/028](#)



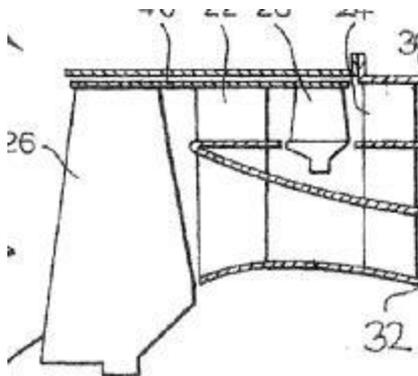
taken from GB630395

## **F01D 5/03**

**Annular blade-carrying members having blades on the inner periphery of the annulus and extending inwardly radially, i.e. inverted rotors**

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/03](#)



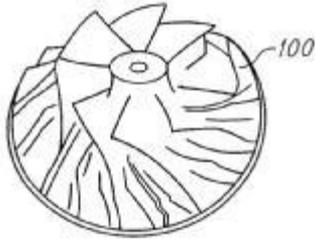
taken from US2006016172

## **F01D 5/04**

**for radial-flow machines or engines**

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/04](#)



taken from JP59113202

## **F01D 5/041**

**[N: of the Ljungström type]**

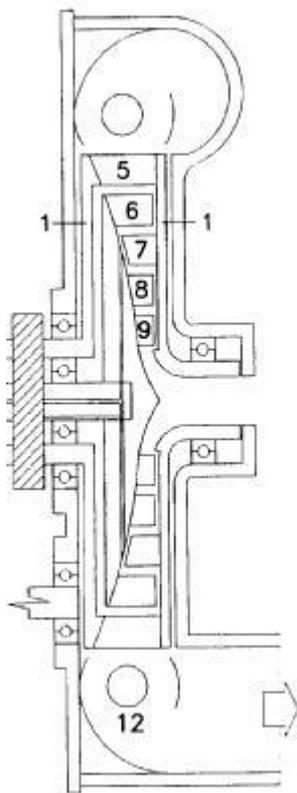
### **Definition statement:**

*This subclass/group covers:*

Ljungström type machines in which the working fluid usually flows radially outwardly between two counter rotating bladed plates

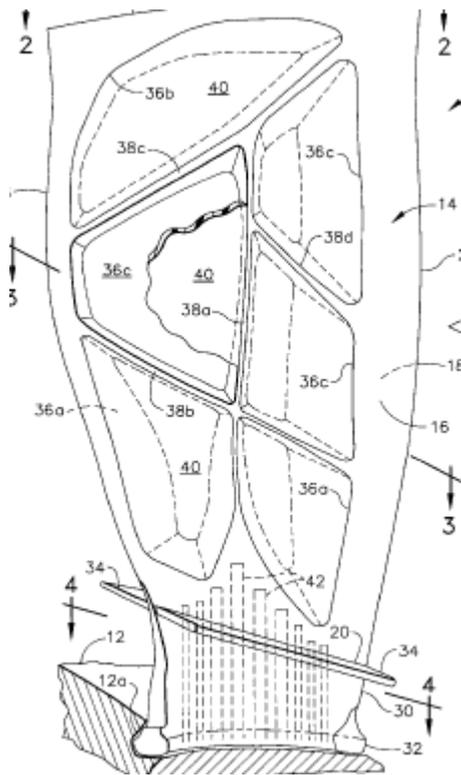
### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/041](#)



taken from EP811752





taken from US6033186

## **F01D 5/186**

**[N: Film cooling (F01D5/187 takes precedence)]**

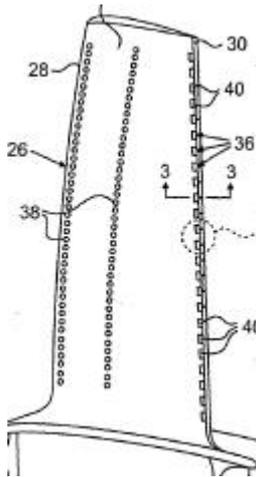
### **Definition statement:**

*This subclass/group covers:*

This sub group covers all aspects of film cooled blades, arrangement and shape of film cooling holes

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/186](#)



taken from EP2267276

## Synonyms and Keywords

In patent documents the following abbreviations are often used:

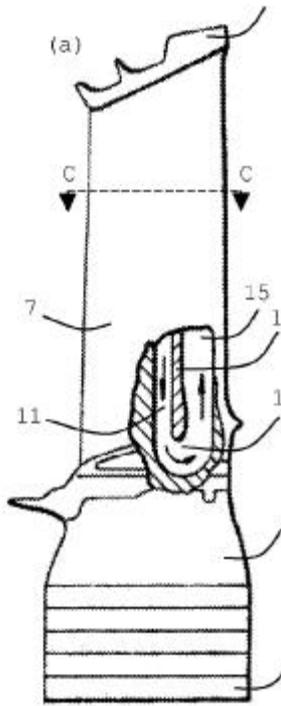
Shower head (cooling)	dito
Film cooling	expression used in order to describe the cooling technology used in order to cool a blade with an external layer of coolant

## F01D 5/187

[N: Convection cooling]

## Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/187](#)



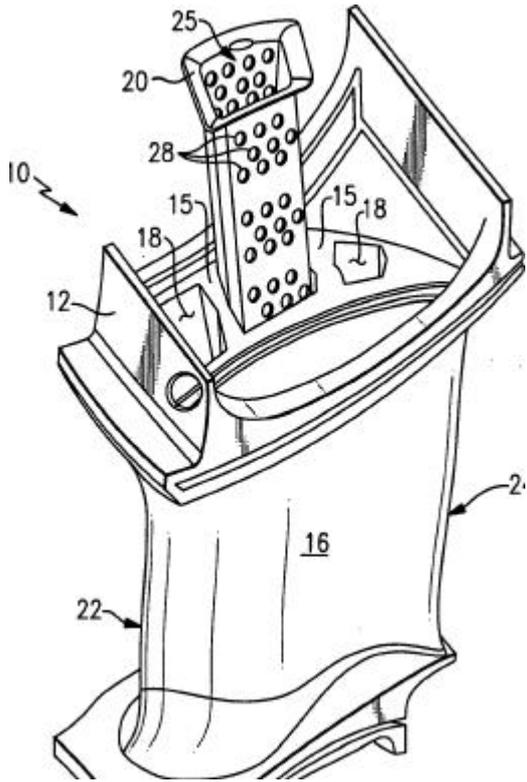
taken from EP2299058

## **F01D 5/188**

**[N: with an insert in the blade cavity to guide the cooling fluid, e.g. forming a separation wall]**

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/188](#)



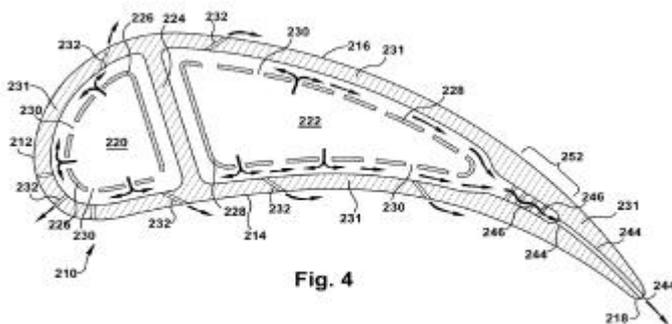
taken from EP2107214

## F01D 5/189

[N: the insert having a tubular cross-section, e.g. airfoil shape]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/189](#)



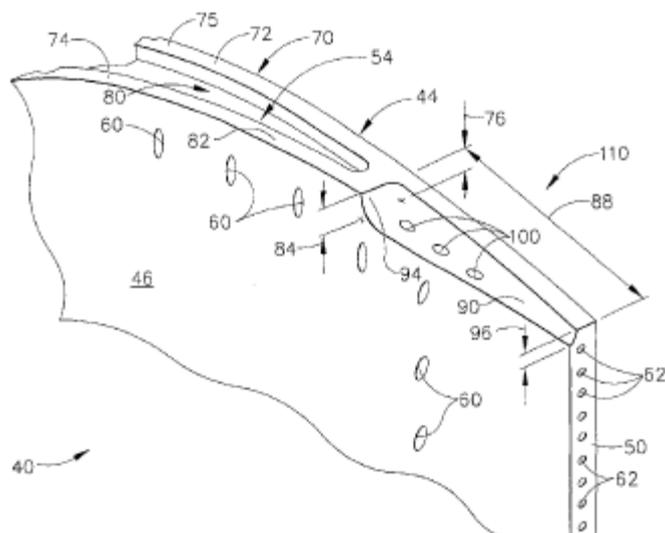
taken from US2010124499

## F01D 5/20

**Specially-shaped blade tips to seal space between tips and stator [N: (F01D5/225 takes precedence)]**

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/20](#)



taken from EP1367222

## F01D 5/22

**Blade-to-blade connections, e.g. for damping vibrations [N: e.g. for damping vibrations]**

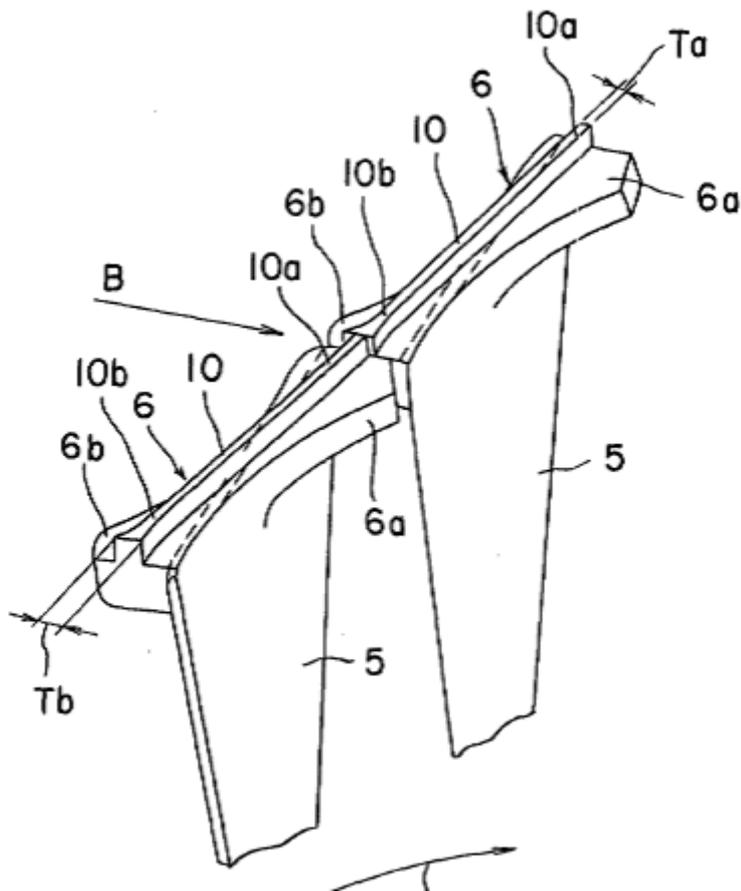
### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

In combination with seals	<a href="#">F01D 11/005</a> and lower subclasses
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### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/22](#)



taken from US6402474

[F05D 2260/96](#)

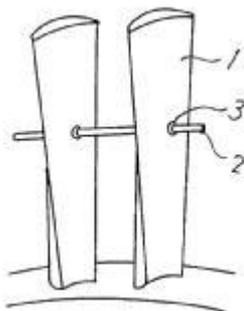
allocate this Indexing Code if document is addressing vibrations and damping thereof

## **F01D 5/24**

**using wire or the like**

### **Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 5/24](#)



taken from JP59108804

## F01D 5/26

**Antivibration means not restricted to blade form or construction or to blade-to-blade connections [N: or to the use of particular materials]**

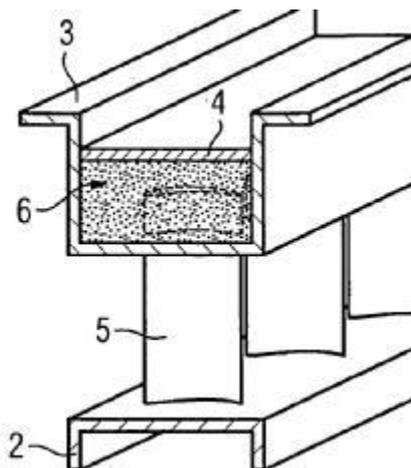
### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Measuring mechanical vibrations	<a href="#">G01H</a>
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### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/26](#)



taken from EP1980715

## F01D 5/28

**Selecting particular materials, [N: Particular measures relating thereto;], Measures against erosion or corrosion**

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Making articles from metallic powder	<a href="#">B22F</a>
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## F01D 5/282

[N: Selecting composite materials, e.g. blades with reinforcing filaments]

### Relationship between large subject matter areas

Shaping/repair of composites	<a href="#">B29C</a>
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### Special rules of classification within this group

Indexing Code-codes for fibers, materials, resin etc. in [F05D 2300/00](#)

## F01D 5/288

[N: Protective coatings for blades]

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Coatings in general	<a href="#">C23C 28/00</a>
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### Special rules of classification within this group

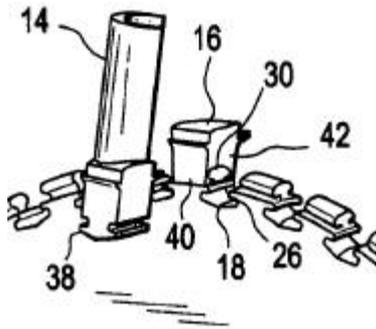
Composition of the coating(s) is covered by [C23C 28/00](#)

## F01D 5/3007

[N: of axial insertion type]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/3007](#)



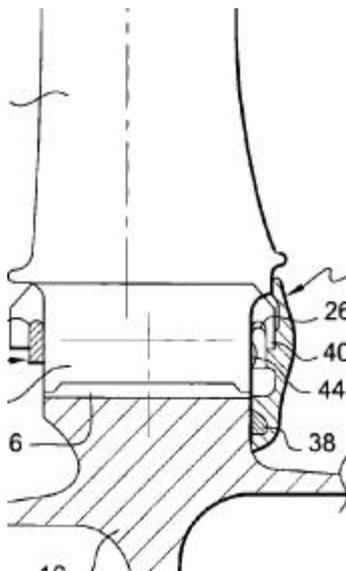
taken from EP2233696

## F01D 5/3015

[N: with side plates]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 5/3015](#)



taken from EP1895103

## F01D 5/30B3

**Locking by means of a key or the like parallel to the axis of the rotor**

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Apparatus used for (automated) bending of keys	<a href="#">B21D 7/06</a>
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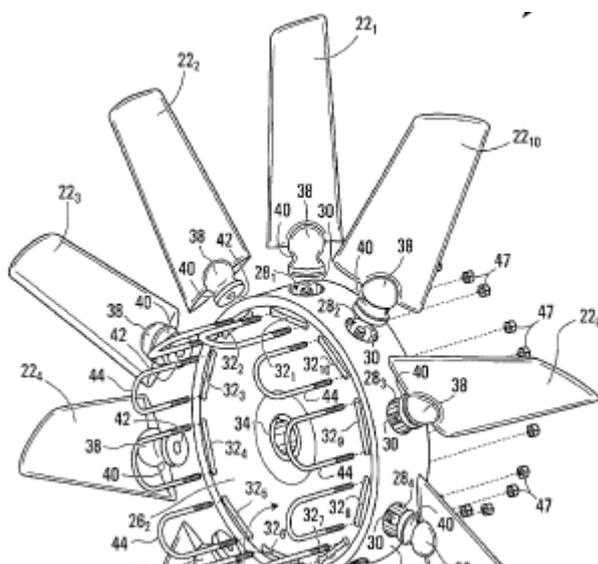
## F01D 7/00

**Rotors with blades adjustable in operation; Control thereof (for reversing F01D1/30 )**

### Definition statement

*This subclass/group covers:*

Rotors with blades adjustable in operation, e.g. unshrouded fans with a single rotor or two counter-rotating rotors



taken from US2006188375

### References relevant to classification in this group

*This subclass/group does not cover:*

Rotors for reversing	<a href="#">F01D 1/30</a>
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## F01D 9/00

**Stators (non-fluid guiding aspects of casings, regulating, controlling, or safety aspects, see the relevant groups)**

### Definition statement

*This subclass/group covers:*  
Stators

## Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Casings	<a href="#">F01D 25/24</a> and <a href="#">F01D 25/26</a>
Regulation or control	<a href="#">F02C 9/00</a>
Safety	<a href="#">F01D 21/00</a>

## F01D 9/047

[N: Nozzle boxes]

### Definition statement

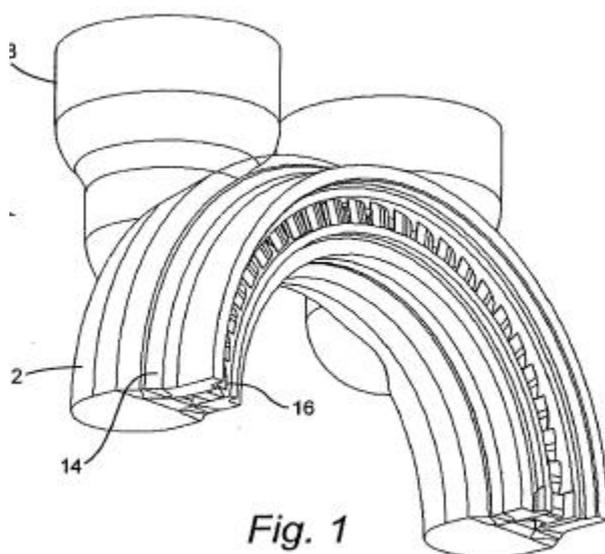
*This subclass/group covers:*

This sub group covers:

Nozzle boxes, i.e. usually a bladed section of a guiding apparatus with inner and outer shrouds segments that when assembled with several other nozzle boxes results in a stator structure

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 9/047](#)



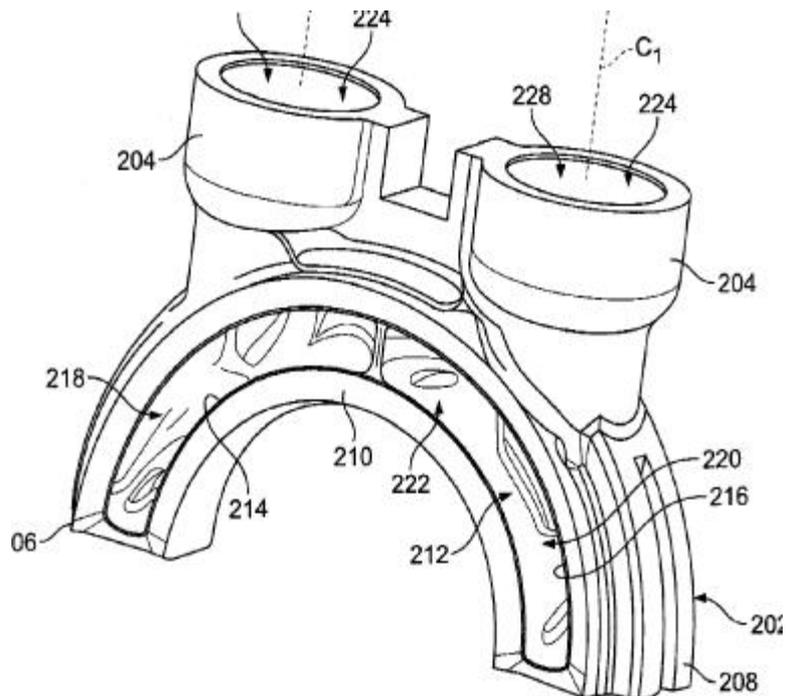
taken from EP1703083

## F01D 9/048

[N: for radial admission]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 9/048](#)



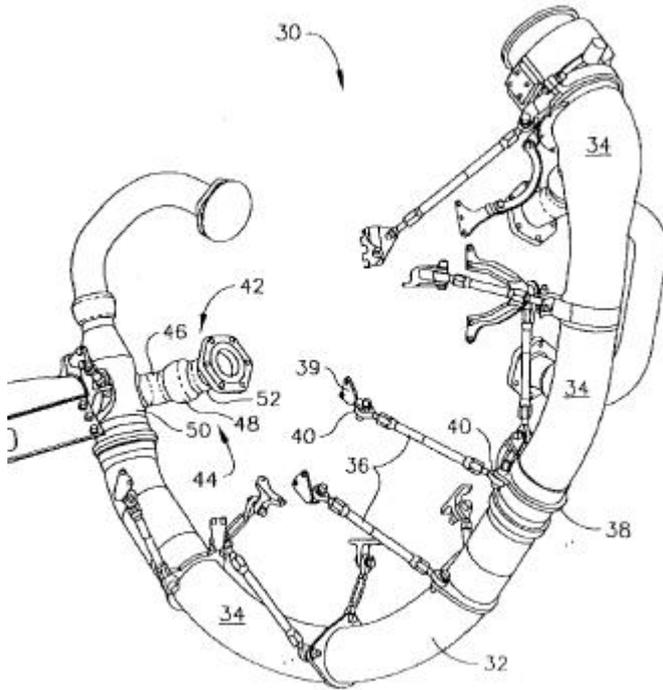
taken from US200805689

## F01D 9/06

Fluid supply conduits to nozzles or the like

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 9/06](#)



taken from EP967376

## F01D 9/065

**Fluid supply or removal conduits traversing the working fluid flow, e.g. for lubrication-, cooling-, or sealing fluids**

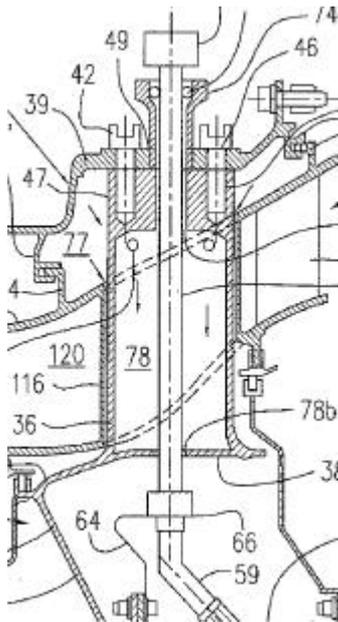
### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Bearings	<a href="#">F01D 25/16</a>
Casings	<a href="#">F01D 25/24</a>
Double casings	<a href="#">F01D 25/26</a>

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 9/065](#)



taken from US2010275572

## F01D 11/00

Preventing or minimising internal leakage of working-fluid, e.g. between stages (sealings in general F16J) [N: sealing arrangements for transition ducts of combustor cans F01D9/023 ]

### References relevant to classification in this group

*This subclass/group does not cover:*

Sealing issues related to centrifugal compressors	<a href="#">F04D</a>
Sealing in general	<a href="#">F16J</a>

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

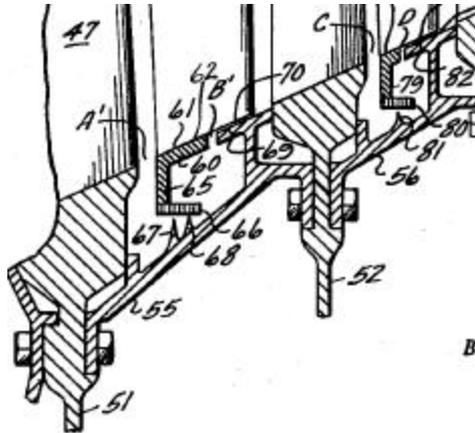
Sealing arrangements for transition ducts of combustor cans	<a href="#">F01D 9/023</a>
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## F01D 11/001

[N: for sealing space between stator blade and rotor]

**Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 11/00](#)



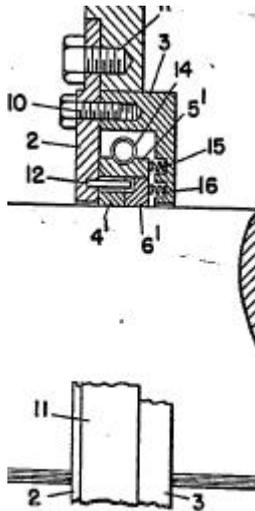
taken from US3146938

**F01D 11/003**

[N: by packing rings; Mechanical seals]

**Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 11/003](#)



taken from GB866636

**F01D 11/20**

## Actively adjusting tip-clearance

### Informative references

Attention is drawn to the following places, which may be of interest for search:

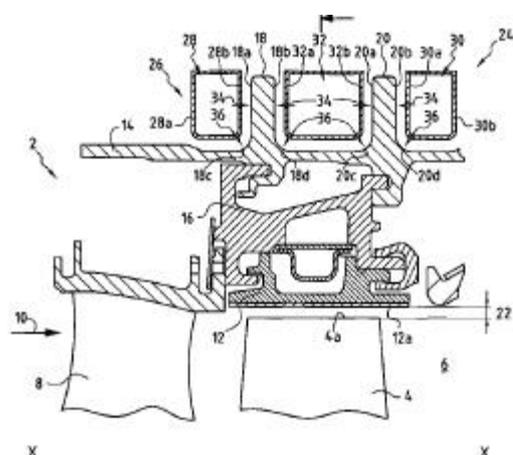
Blade tip magnetic field sensors	<a href="#">G01P 3/487</a>
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## F01D 11/24

by selectively cooling-heating stator or rotor components

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 11/24](#)



taken from EP1555394

## F01D 13/00

Combinations of two or more machines or engines (F01D15/00 takes precedence; regulating or controlling, see the relevant groups; combinations of two or more pumps

### References relevant to classification in this group

*This subclass/group does not cover:*

Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby	<a href="#">F01D 15/00</a>
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## Informative references

Attention is drawn to the following places, which may be of interest for search:

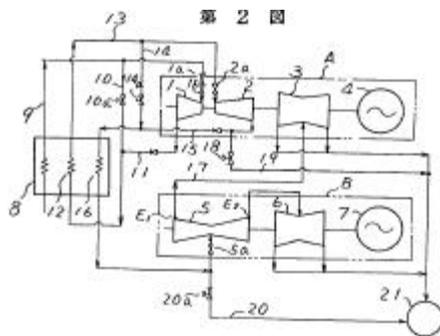
Combinations of two or more pumps	<a href="#">F04D</a>
Fluid gearing	<a href="#">F16H</a>

## F01D 13/003

[N: with at least two independent shafts, i.e. cross-compound]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 13/003](#)



taken from JP359003104

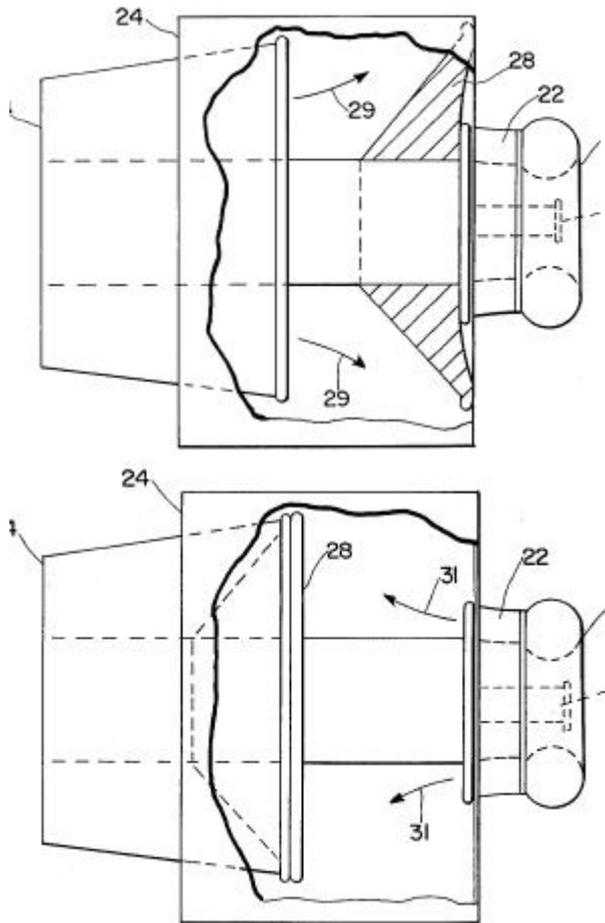
## F01D 13/006

[N: one being a reverse turbine]

### Definition statement

*This subclass/group covers:*

Machines or engines containing a separate turbine for reverse operation



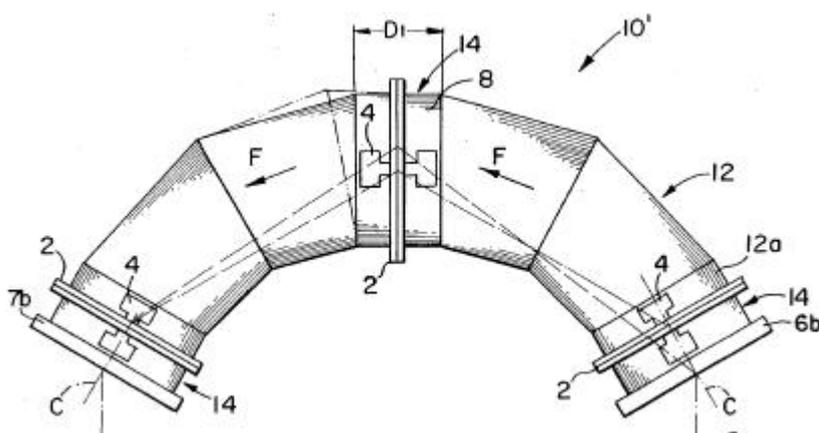
taken from US4245467

## F01D 13/02

Working-fluid interconnection of machines or engines

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 13/02](#)



taken from US4986732

## F01D 15/00

**Adaptations of machines or engines for special use;  
Combinations of engines with devices driven thereby  
(regulating or controlling see the relevant groups; aspects  
predominantly concerning driven devices, see the relevant  
classes for the devices)**

### Definition statement

*This subclass/group covers:*

Adaptation of machines or engines for special use, combinations of engines with devices driven thereby: gas turbines in combination with pumps, electrical generators, turbines specifically adapted for driving vehicles, air turbines used in compressed air driven power tools or dentistry applications

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Dental machines	<a href="#">A61C 1/00</a>
Portable grinding machines	<a href="#">B24B 23/00</a>

## F01D 15/10

**Adaptations for driving, or combinations with, electric  
generators**

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Features relating to the electrical generator	<a href="#">H02K</a>
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## F01D 17/00

**Regulating or controlling by varying flow (for reversing F01D1/30; by varying rotor-blade position F01D7/00; specially for starting F01D19/00; shutting-down 21/00; regulating or controlling in general G05) [N: specially adapted for hand-held tools or the like F01D15/06]**

## Informative references

Attention is drawn to the following places, which may be of interest for search:

Specially for starting	<a href="#">F01D 19/00</a>
Specially for starting	<a href="#">F01D 19/00</a>
Shutting-down	<a href="#">F01D 21/00</a>
Regulating or controlling by varying flow for reversing	<a href="#">F01F 1/30</a>
Regulating or controlling in general	G05

## F01D 17/06

responsive to speed

## Informative references

Attention is drawn to the following places, which may be of interest for search:

Measurement of rotational speed	<a href="#">G01P</a>
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## F01D 17/08

responsive to condition of working-fluid, e.g. pressure

## Informative references

Attention is drawn to the following places, which may be of interest for search:

Pressure sensors	<a href="#">G01L</a>
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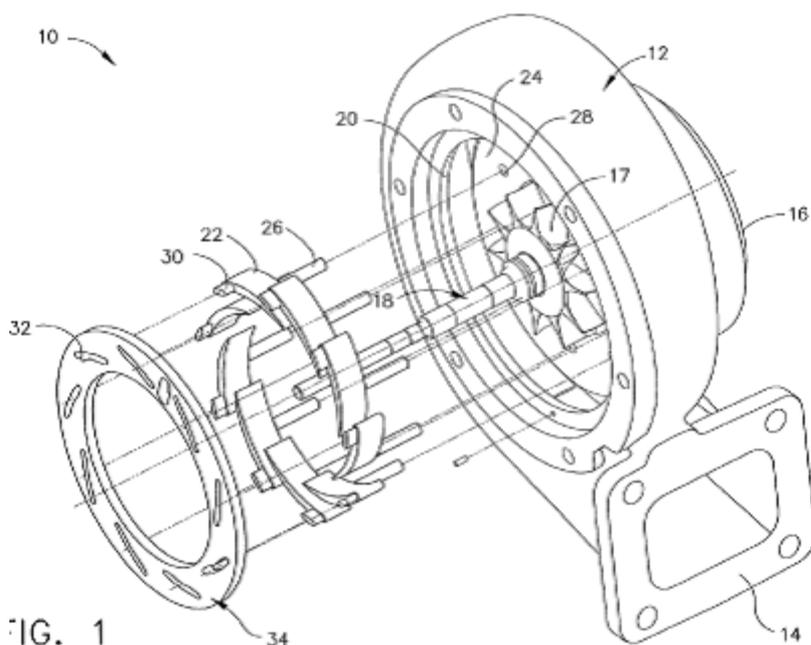
## F01D 17/165

[N: for radial flow; i.e. the vanes turning around axes which are essentially parallel to the rotor centre line (F01D17/167 takes precedence)]

## Special rules of classification within this group

If specific for turbochargers classify also in [F05D 2220/40](#) as additional information or [F02C 6/12](#) as invention information

Illustrative example of subject matter classified in [F01D 17/165](#)



taken from US2003014972

## **F01D 17/167**

**[N: of vanes moving in translation]**

### **Special rules of classification within this group**

If specific for turbochargers classify also in [F05D 2220/40](#) as additional information or [F02C 6/12](#) as invention information

## **F01D 19/00**

**Starting of machines or engines; Regulating, controlling, or safety means in connection therewith (warming-up before starting F01D25/10; turning or inching gear F01D25/34 )**

### **Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Warming-up before starting	<a href="#">F01D 25/10</a>
Turning or inching gear	<a href="#">F01D 25/34</a>

Control of a generator (circuit) during starting/stopping of driving means	<a href="#">H02P 9/08</a>
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## F01D 21/00

**Shutting-down of machines or engines, e.g. in emergency; Regulating, controlling, or safety means not otherwise provided for**

### Definition statement

*This subclass/group covers:*

Shutting-down of machines or engines, e.g. in emergency; regulating, controlling, or safety means not otherwise provided for, e.g. shutting down operations or methods should be classified in here if none of the sub groups apply

## F01D 21/003

**[N: Arrangements for testing or measuring (for measuring vibrations G01H)]**

### Relationship between large subject matter areas

Measurements by optical means	<a href="#">G01B</a>
Measuring vibrations	<a href="#">G01H</a>
Measuring linear or angular speed	<a href="#">G01P</a>

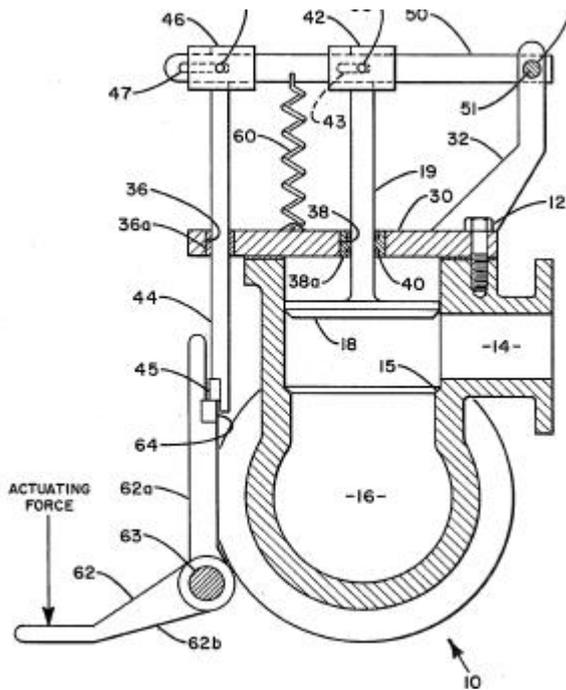
## F01D 21/16

**Trip gear**

### Definition statement

*This subclass/group covers:*

Trip mechanisms for trip valves



taken from US4379544

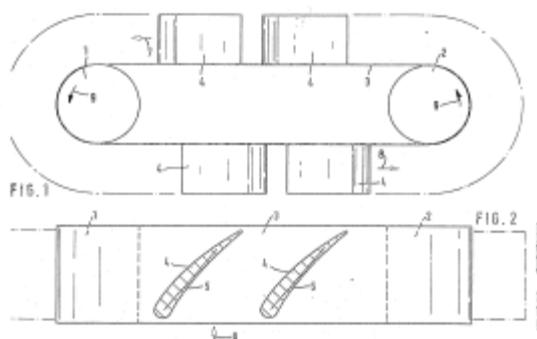
## F01D 23/00

**Non-positive-displacement machines or engines with movement other than pure rotation, e.g. of endless-chain type**

### Definition statement

*This subclass/group covers:*

Illustrative example of subject matter classified in this group:



taken from DE3139802

## F01D 25/00

**Component parts, details, or accessories, not provided for in, or of interest apart from, other groups**

## F01D 25/002

[N: Cleaning of turbomachines]

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Cleaning in general	<a href="#">B08B</a>
Administration of workflow	<a href="#">G06Q 10/00</a>

## F01D 25/16

Arrangement of bearings; Supporting or mounting bearings in casings (bearings per se F16C)

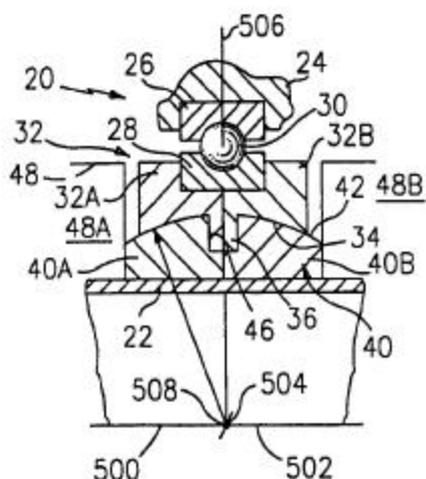
### Informative references

Attention is drawn to the following places, which may be of interest for search:

Bearings in general	<a href="#">F16C</a>
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### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/16](#)



representative image taken from EP1013896

This subgroup also contains features relating to turbochargers.

If information is presented about the overall bearing configuration see also

[F02C 7/06](#).

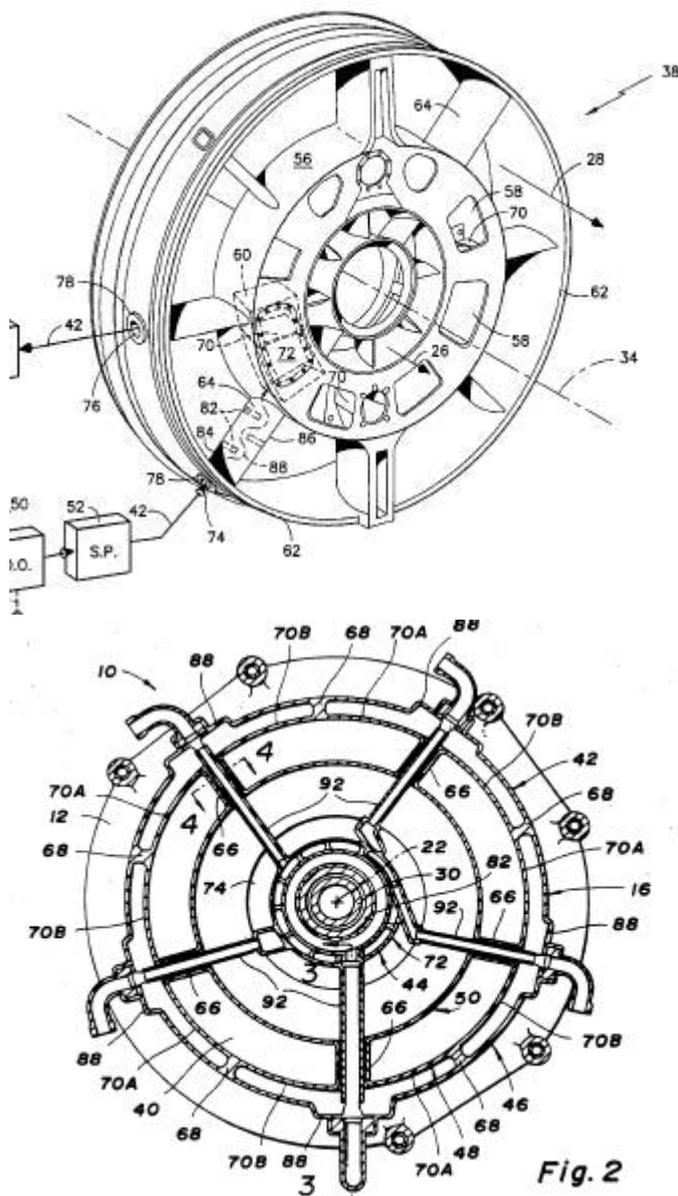
If specific for turbochargers classify also in [F05D 2220/40](#)

## F01D 25/162

[N: Bearing supports]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/162](#)



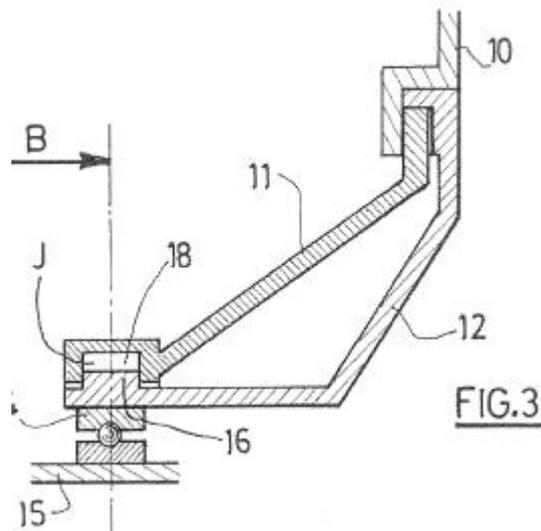
taken from EP1630358 and US5080555

## F01D 25/164

**[N: Flexible supports; Vibration damping means associated with the bearing]**

**Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 25/164](#)



taken from EP1553324

**F01D 25/166**

**[N: Sliding contact bearing (gas bearings F01D25/22 )]**

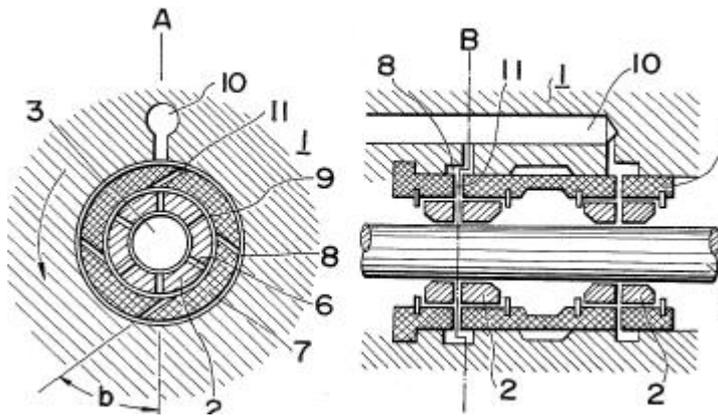
**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Gas bearings in turbomachines	<a href="#">F01D 25/22</a>
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**Special rules of classification within this group**

Illustrative example of subject matter classified in [F01D 25/166](#)



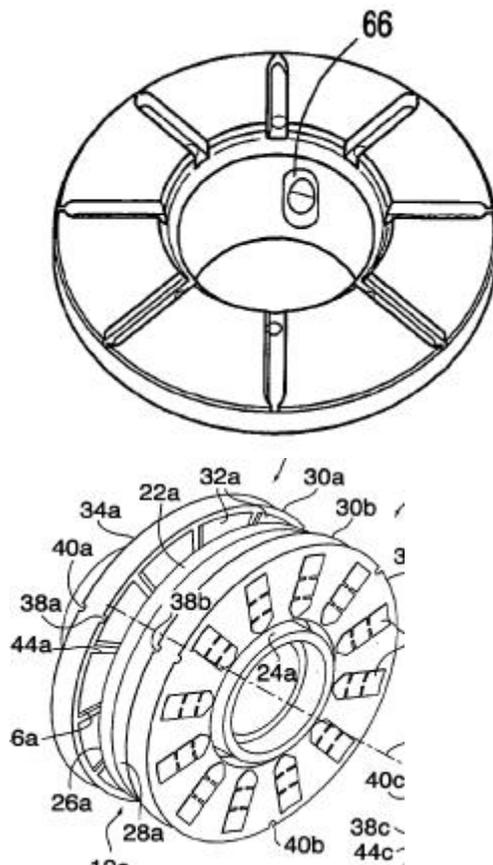
taken from US4371219

## F01D 25/168

[N: for axial load mainly]

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/168](#)



taken from US2005047690 and US2005147335

## F01D 25/18

### Lubricating arrangements (of machines or engines in general F01M)

#### Definition statement

*This subclass/group covers:*

A priori lubrication arrangements for turbomachinery but also features relating to turbocharger lubrication (see spec. rules below)

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Lubricating arrangements of machines or engines in general	<a href="#">F01M</a>
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#### Special rules of classification within this group

If specific for turbochargers classify also in [F05D 2220/40](#)

## F01D 25/24

**Casings, (modified for heating or cooling F01D25/14); Casing parts, e.g. diaphragms, casing fastenings (casings for rotary machines or engines in general F16M) [N: special arrangements in stators dealing with breaking-off of part of rotor F01D21/045 ]**

#### Definition statement

*This subclass/group covers:*

a priori casings for turbomachinery but also features relating to turbocharger casings.

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Special arrangements in stators dealing with breaking-off of part of rotor	<a href="#">F01D 21/045</a>
Casings modified for heating or cooling	<a href="#">F01D 25/14</a>

Casings for rotary machines or engines in general	<a href="#">F16M</a>
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### Special rules of classification within this group

If specific for turbochargers classify also in [F05D 2220/40](#)

### F01D 25/285

[N: Temporary support structures, e.g. for testing, assembling, installing, repairing; Assembly methods using such structures]

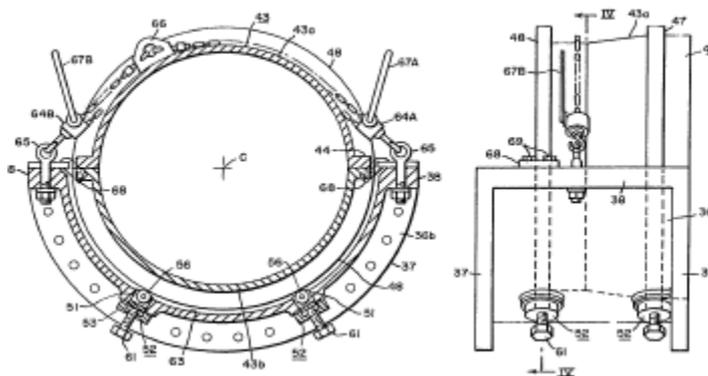
### Informative references

Attention is drawn to the following places, which may be of interest for search:

Tools for holding and clamping	<a href="#">B25B</a>
Devices holding or positioning work or tools	<a href="#">B23Q</a>

### Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/285](#)



taken from GB1211313

### F01D 25/30

Exhaust heads, chambers, or the like

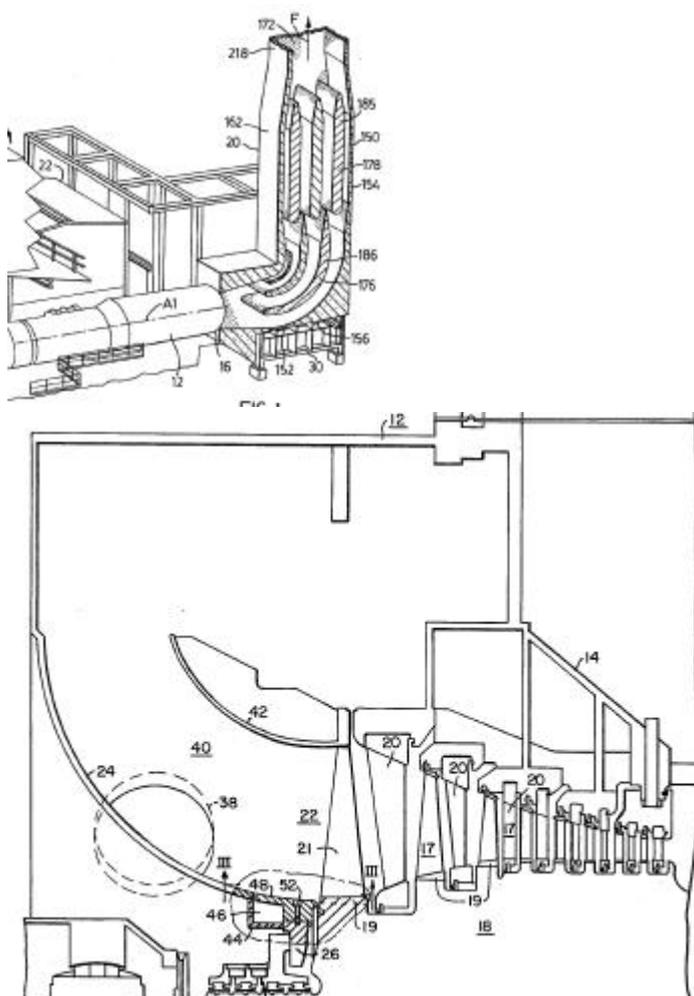
## Informative references

Attention is drawn to the following places, which may be of interest for search:

Silencing or noise abatement in jet pipes or walls	<a href="#">F01K 1/82C</a>
Noise attenuators in general	<a href="#">G10K 11/00</a>

## Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/30](#)



taken from EP1262666 and US3945760

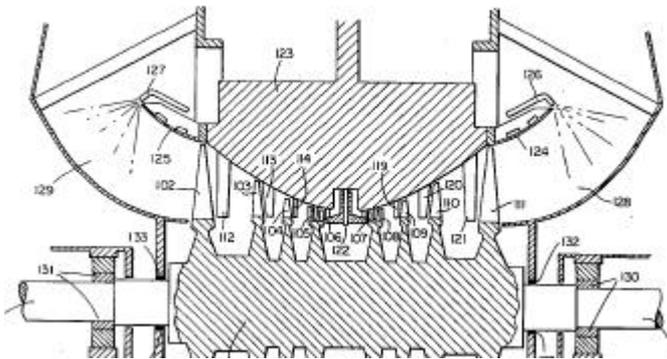
- Classify in [F05D 2260/96](#) in case of noise suppression.

## F01D 25/305

[N: with fluid injection, e.g. liquid injection]

## Special rules of classification within this group

Illustrative example of subject matter classified in [F01D 25/305](#)



taken from US3885822

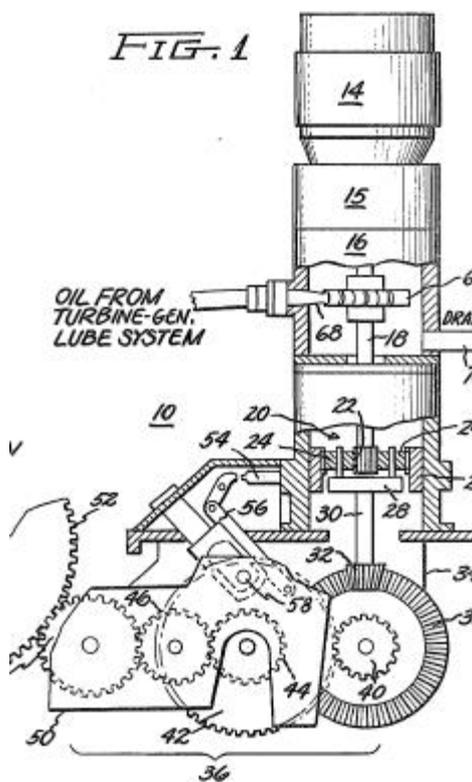
## F01D 25/34

### Turning or inching gear

#### Definition statement

*This subclass/group covers:*

Auxiliary equipment for rotating the rotor of a gas or steam turbine at low rpm, e.g. for inspection purposes or prevention of sagging and the like



taken from US4430575

