

F02K

JET-PROPULSION PLANTS (features of jet-propulsion plants common to gas-turbine plants, air intakes or fuel supply control of air-breathing jet-propulsion plants [F02C 7/00](#), [F02C 9/00](#))

References

Limiting references

This place does not cover:

Features of jet-propulsion plants common to gas-turbine plants, air intakes or fuel supply control of air-breathing jet-propulsion plants	F02C 7/00 , F02C 9/00
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Informative references

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

Arrangement or mounting of jet-propulsion plants in land vehicles or vehicles in general	B60K
Arrangement or mounting of jet-propulsion plants in waterborne vessels	B63H
Controlling aircraft attitude, flight direction or altitude by jet reaction	B64C 15/00
Arrangement or mounting of jet-propulsion plants in aircraft	B64D
Plants characterised by the power of the working fluid being divided between jet propulsion and another form of propulsion, e.g. propeller	F02B 61/00 , F02C 6/20

Special rules of classification

In this subclass the Indexing Code 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

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Jet-propulsion plants	means plants using combustion to produce a fluid stream from which a propulsive thrust on the plant is obtained on the reaction principle
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Jet pipe	means the exhaust duct of a jet engine that carries the exhaust to the nozzle
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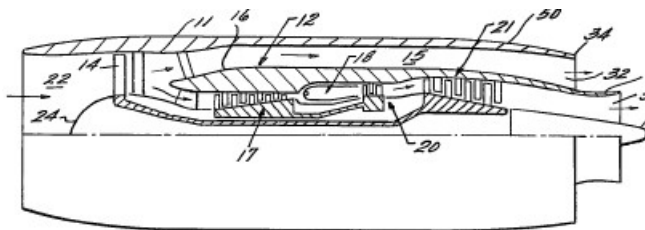
F02K 1/00

Plants characterised by the form or arrangement of the jet pipe or nozzle; Jet pipes or nozzles peculiar thereto (rocket nozzles [F02K 9/97](#))

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



References

Limiting references

This place does not cover:

Rocket nozzles	F02K 9/97
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F02K 1/002

{with means to modify the direction of thrust vector ([F02K 1/54](#) takes precedence; thrust vectoring of rockets [F02K 9/80](#))}

References

Limiting references

This place does not cover:

Nozzles having means for reversing jet thrust	F02K 1/54
Thrust vectoring of rockets	F02K 9/80

Informative references

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

Aerodynamic vectoring surfaces	B64C
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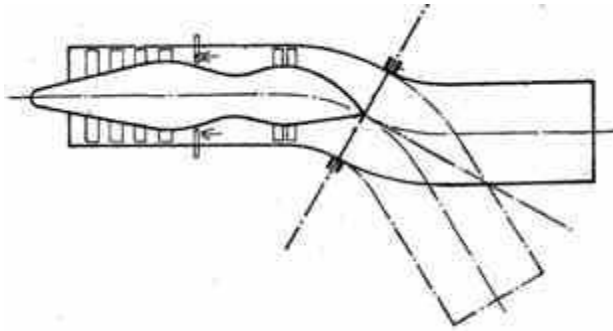
F02K 1/004

{by using one or more swivable nozzles rotating about their own axis}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



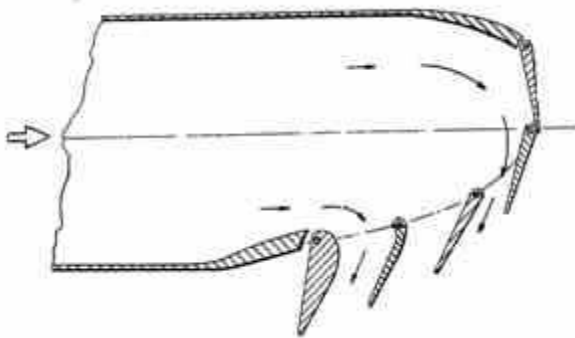
F02K 1/006

{within one plane only}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



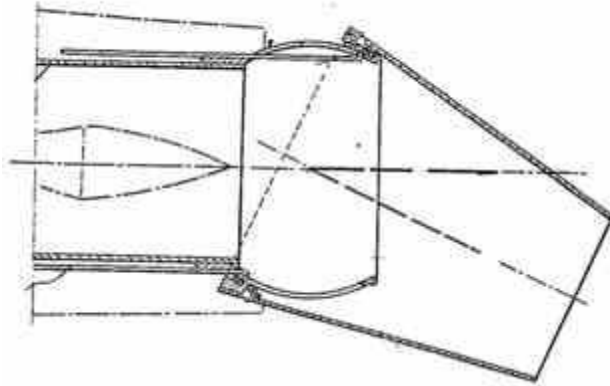
F02K 1/008

{in any rearward direction}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



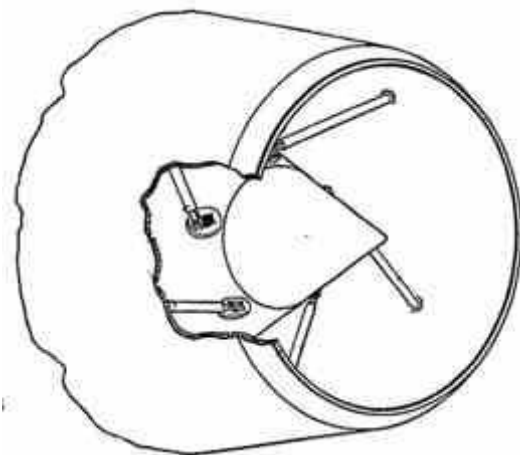
F02K 1/04

Mounting of an exhaust cone in the jet pipe

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



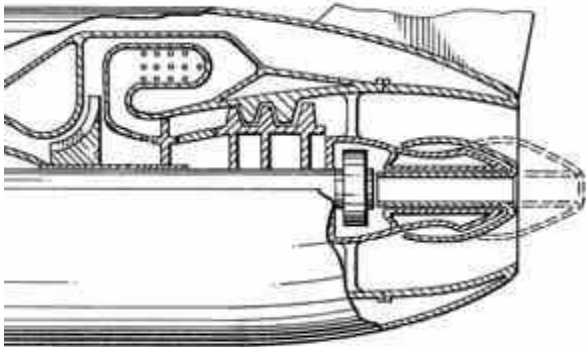
F02K 1/08

by axially moving or transversely deforming an internal member, e.g. the exhaust cone

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



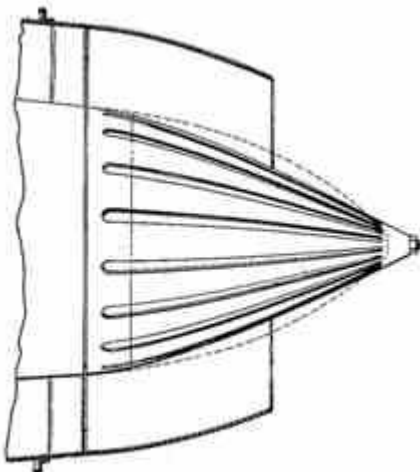
F02K 1/085

{by transversely deforming an internal member}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



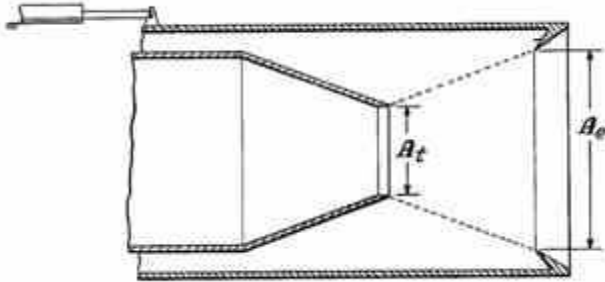
F02K 1/09

by axially moving an external member, e.g. a shroud (F02K 1/12 takes precedence)

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

**References****Limiting references**

This place does not cover:

Varying effective area of jet pip or nozzle by means of pivoted flaps	F02K 1/12
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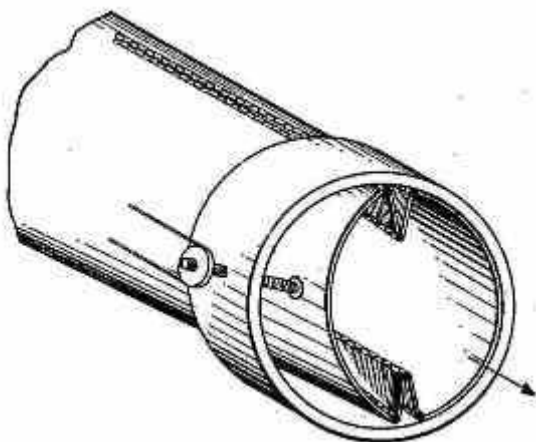
F02K 1/10

by distorting the jet pipe or nozzle

Definition statement

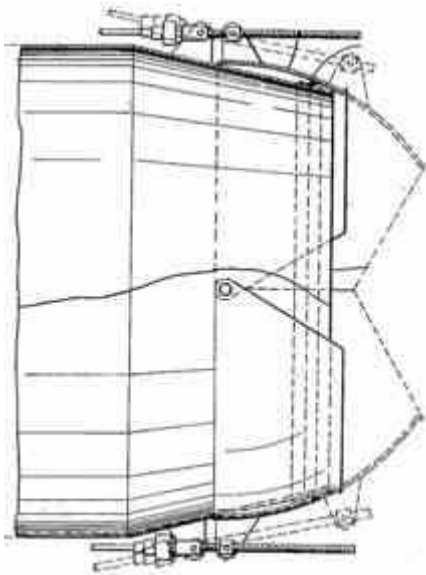
This place covers:

Illustrative example of subject matter classified in this group.



F02K 1/11**by means of pivoted eyelids****Definition statement***This place covers:*

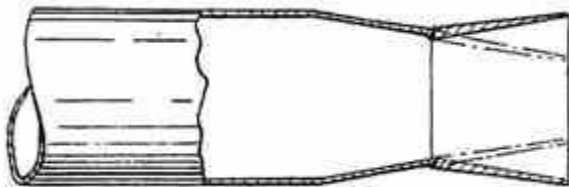
Illustrative example of subject matter classified in this group.

**F02K 1/1207**

{of one series of flaps hinged at their upstream ends on a fixed structure
 ([F02K 1/1215](#) - [F02K 1/1292](#) take precedence)}

Definition statement*This place covers:*

Illustrative example of subject matter classified in this group.

**References****Limiting references***This place does not cover:*

Two or more series of flaps; One moveable series of flaps hinged to upstream axially moveable structure	F02K 1/1215 -F02K 1/1292
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F02K 1/1215

{of two series of flaps, the upstream series having its flaps hinged at their upstream ends on a fixed structure, and the downstream series having its flaps hinged at their downstream ends on a fixed structure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



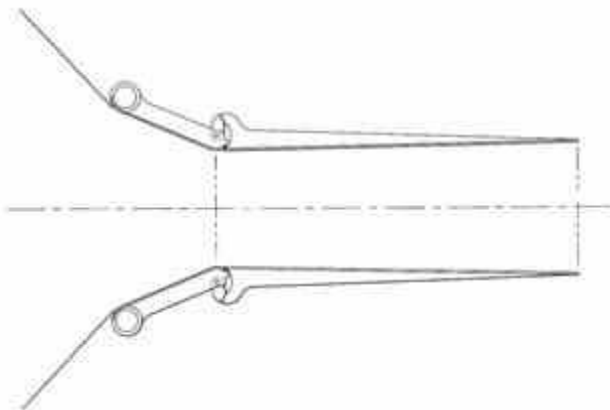
F02K 1/1223

{of two series of flaps, the upstream series having its flaps hinged at their upstream ends on a fixed structure and the downstream series having its flaps hinged at their upstream ends on the downstream ends of the flaps of the upstream series}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



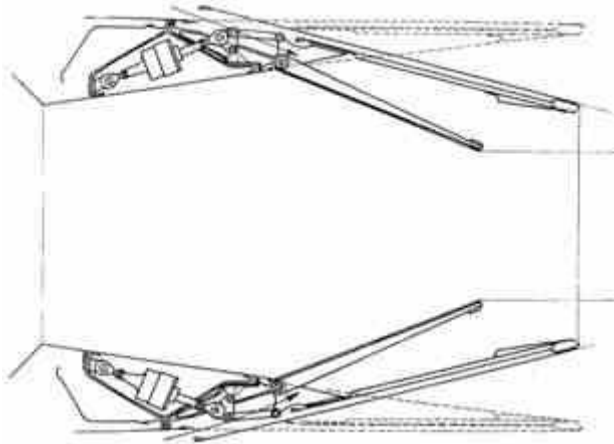
F02K 1/123

{of two series of flaps, both having their flaps hinged at their upstream ends on a fixed structure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



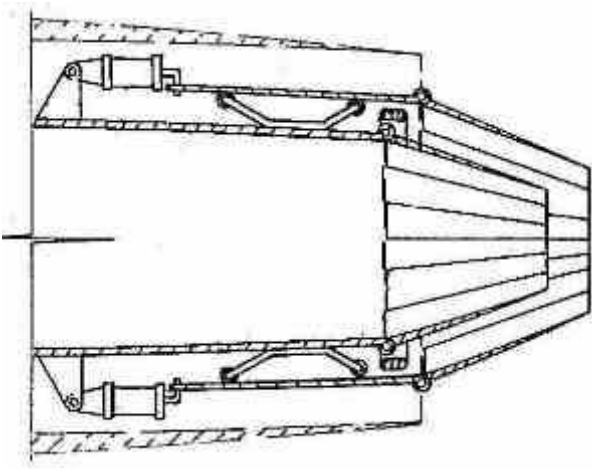
F02K 1/1238

{of two series of flaps, the upstream series having its flaps hinged at their upstream ends on a fixed structure and the downstream series having its flaps hinged at their upstream ends on a substantially axially movable structure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



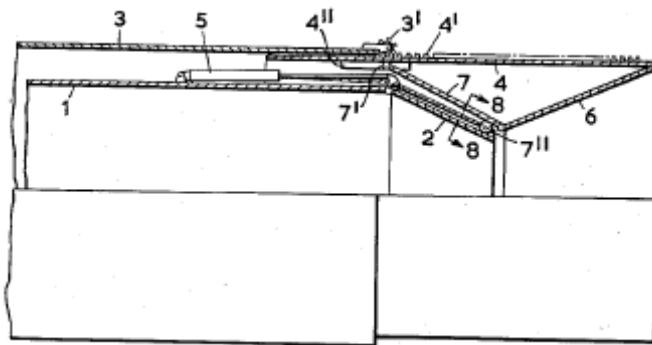
F02K 1/1246

{of two series of flaps, the upstream series having its flaps hinged at their upstream ends on a fixed structure and the downstream series having its flaps hinged at their downstream ends on a substantially axially movable structure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

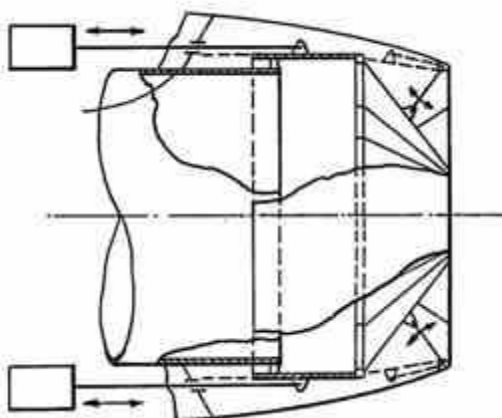
**F02K 1/1261**

{of one series of flaps hinged at their upstream ends on a substantially axially movable structure}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



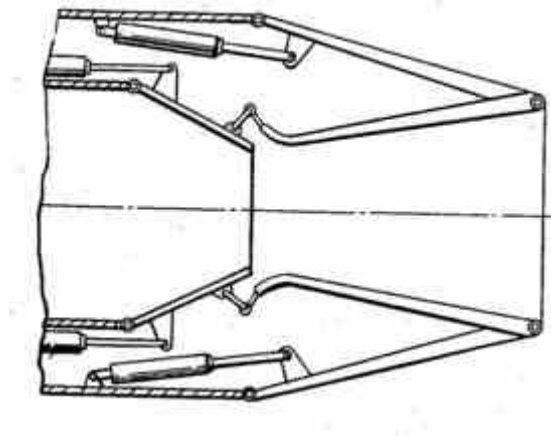
F02K 1/1269

{of three series of flaps, the upstream series having its flaps hinged at their upstream ends on a fixed structure and the internal downstream series having its flaps hinged at their downstream ends on the downstream ends of the flaps of the external downstream series hinged on a fixed structure at their upstream ends}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



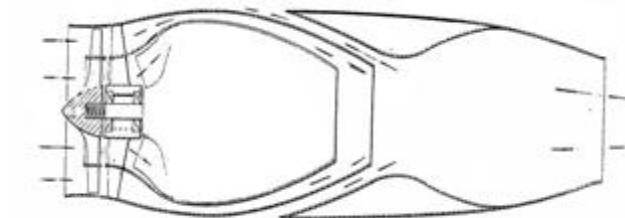
F02K 1/36

having an ejector

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



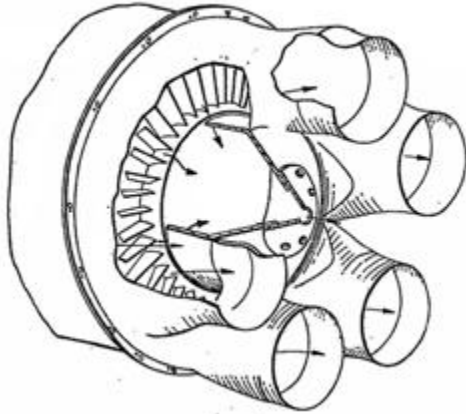
F02K 1/40

Nozzles having means for dividing the jet into a plurality of partial jets or having an elongated cross-section outlet

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



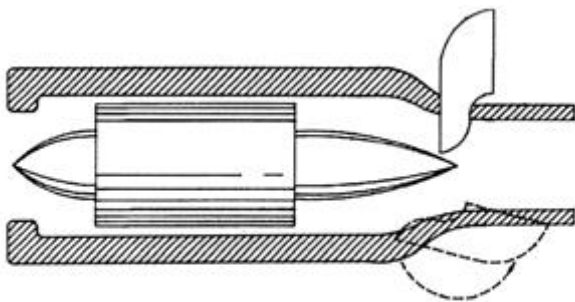
F02K 1/42

the means being movable into an inoperative position

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



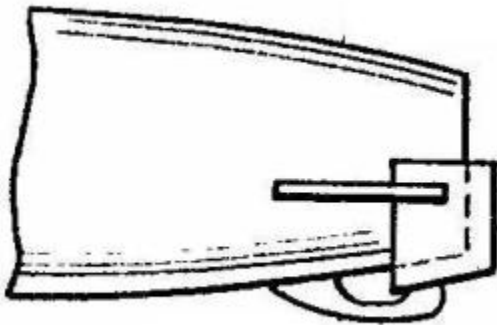
F02K 1/44

Nozzles having means, e.g. a shield, reducing sound radiation in a specified direction ([F02K 1/40](#) takes precedence)

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

**References****Limiting references**

This place does not cover:

Nozzles having means for dividing the jet into a plurality of partial jets or having an elongated cross-section outlet	F02K 1/40
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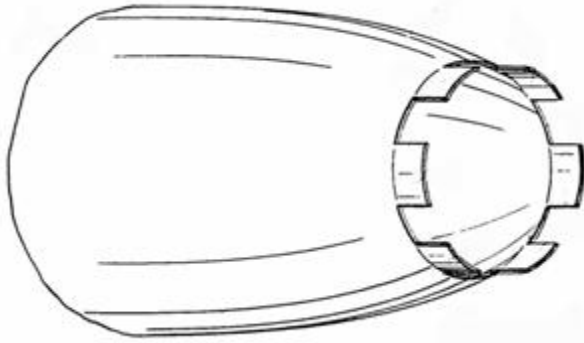
F02K 1/46

Nozzles having means for adding air to the jet or for augmenting the mixing region between the jet and the ambient air, e.g. for silencing ([F02K 1/28](#), [F02K 1/36](#), [F02K 1/38](#) take precedence)

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



References

Limiting references

This place does not cover:

Using fluid jets to influence the jet flow	F02K 1/28
Having an ejector	F02K 1/36
Introducing air inside the jet	F02K 1/38

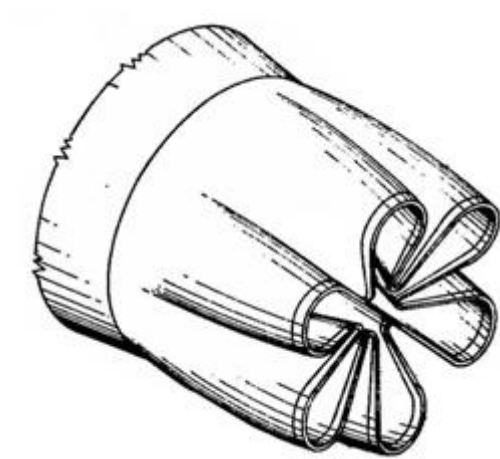
F02K 1/48

Corrugated nozzles

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



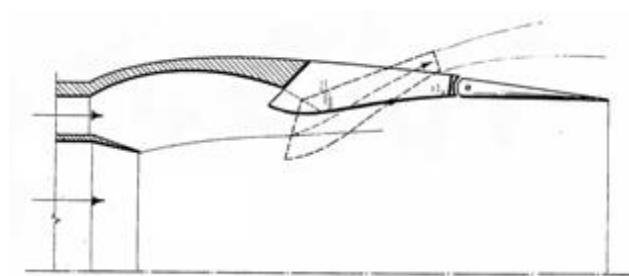
F02K 1/50

Deflecting outwardly a portion of the jet by retractable scoop-like baffles

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



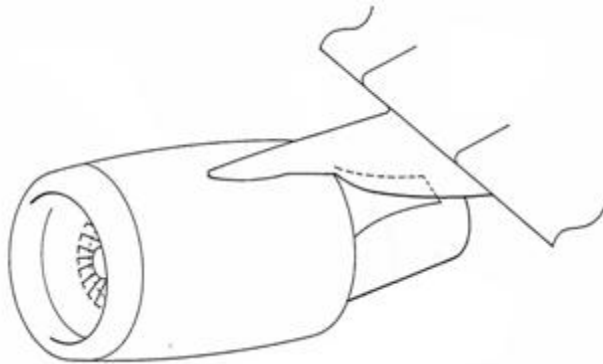
F02K 1/52

Nozzles specially constructed for positioning adjacent to another nozzle or to a fixed member, e.g. fairing

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



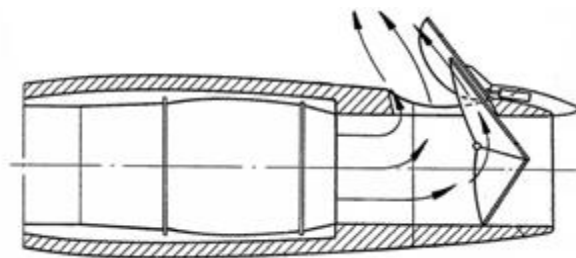
F02K 1/563

{in specified direction, e.g. to obviate its reinjection}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



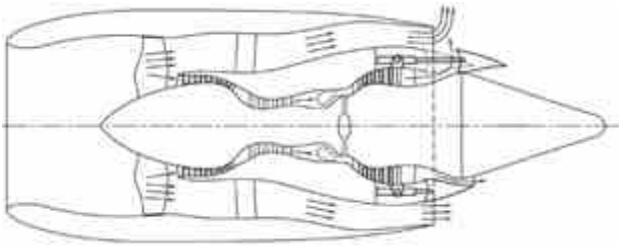
F02K 1/566

{by blocking the rearward discharge by means of a translatable member}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



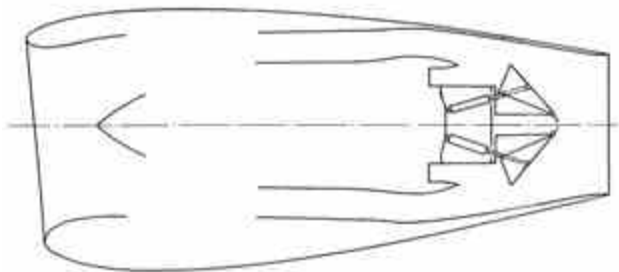
F02K 1/58

Reversers mounted on the inner cone or the nozzle housing {or the fuselage}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



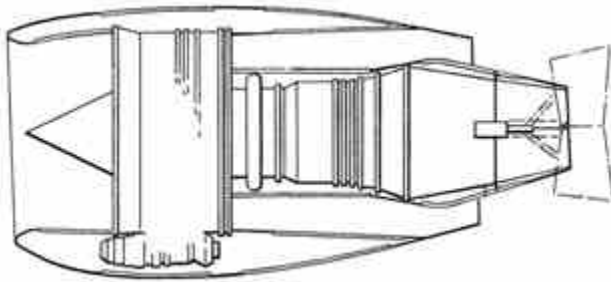
F02K 1/60

by blocking the rearward discharge by means of pivoted eyelids or clamshells, e.g. target-type reversers

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



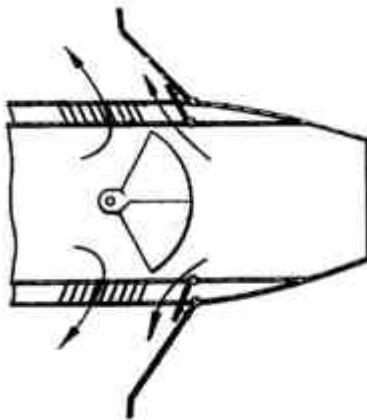
F02K 1/605

{the aft end of the engine cowling being movable to uncover openings for the reversed flow}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



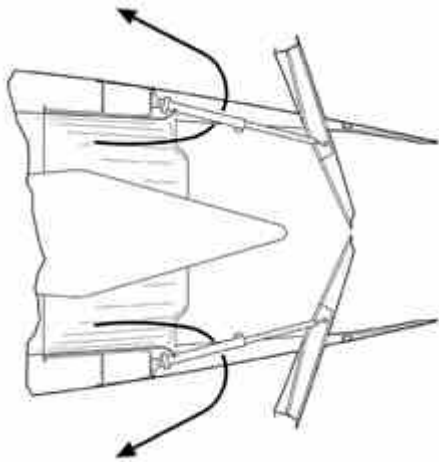
F02K 1/62

by blocking the rearward discharge by means of flaps

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



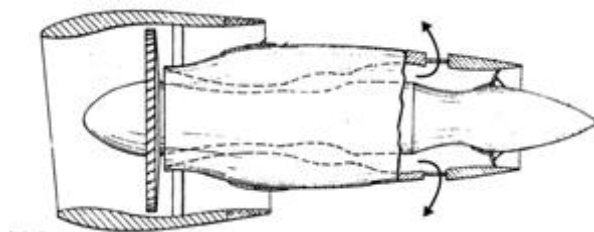
F02K 1/625

{the aft end of the engine cowling being movable to uncover openings for the reversed flow}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



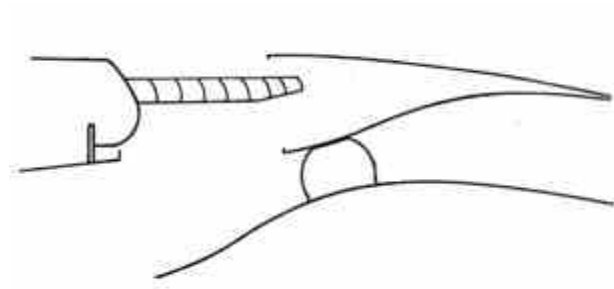
F02K 1/645

{using inflatable diaphragms}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



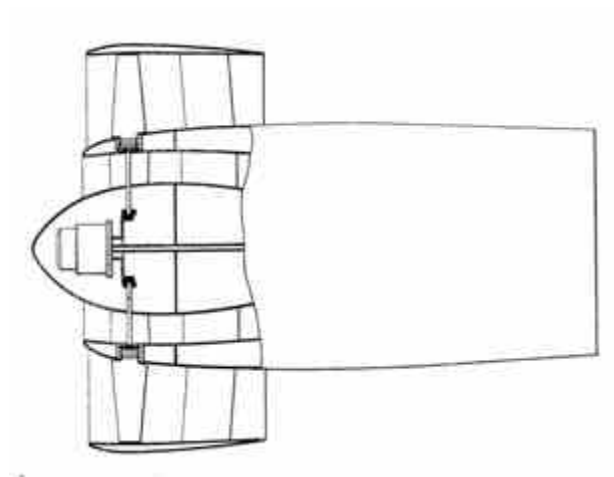
F02K 1/66

using reversing fan blades

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



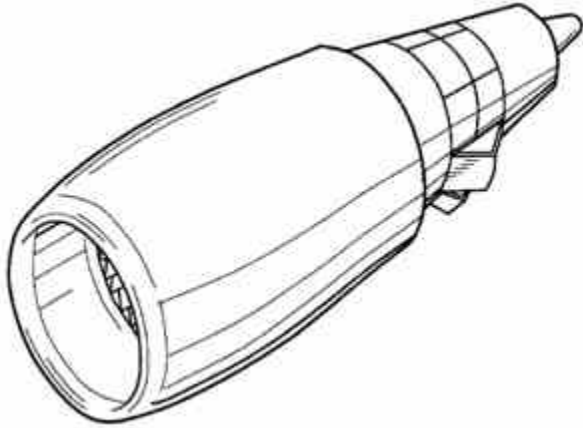
F02K 1/68

Reversers mounted on the engine housing downstream of the fan exhaust section

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



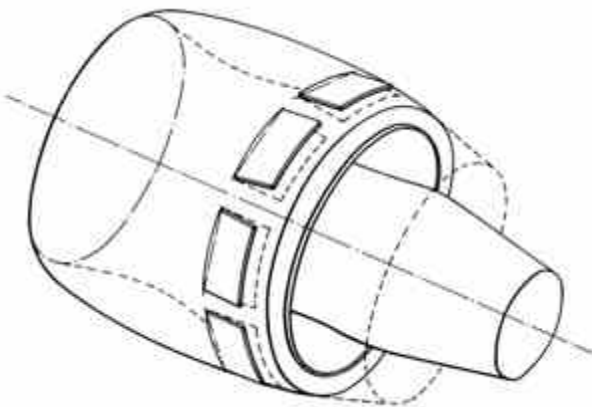
F02K 1/70

using thrust reverser flaps or doors mounted on the fan housing

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



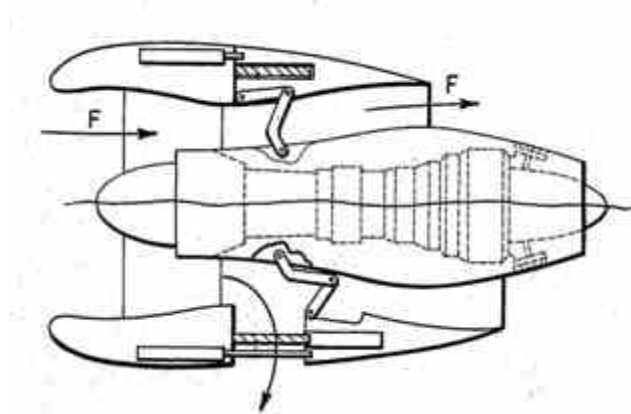
F02K 1/72

the aft end of the fan housing being movable to uncover openings in the fan housing for the reversed flow

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



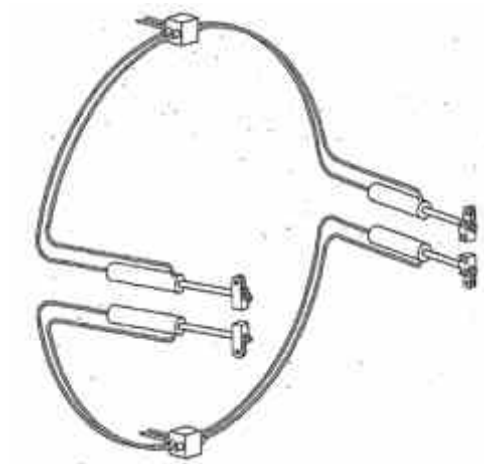
F02K 1/76

Control or regulation of thrust reversers

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



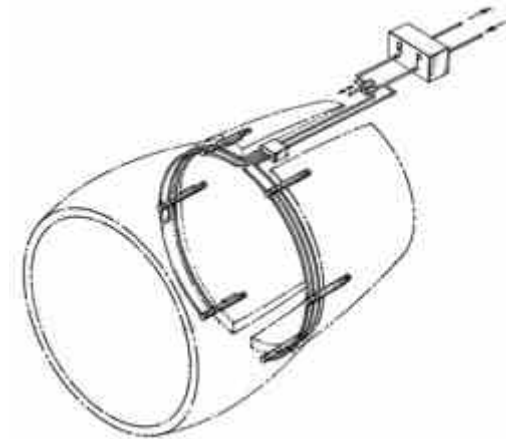
F02K 1/763

{with actuating systems or actuating devices; Arrangement of actuators for thrust reversers}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



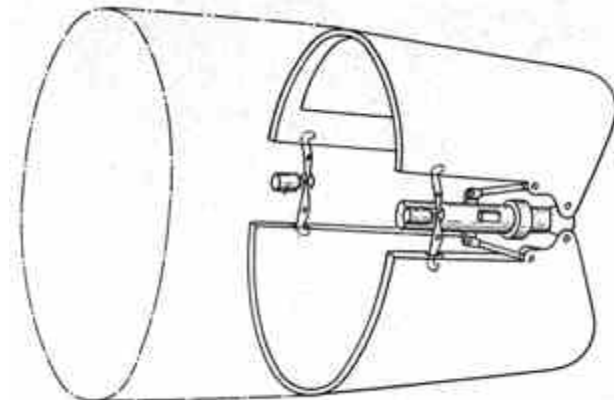
F02K 1/766

{with blocking systems or locking devices; Arrangement of locking devices for thrust reversers}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



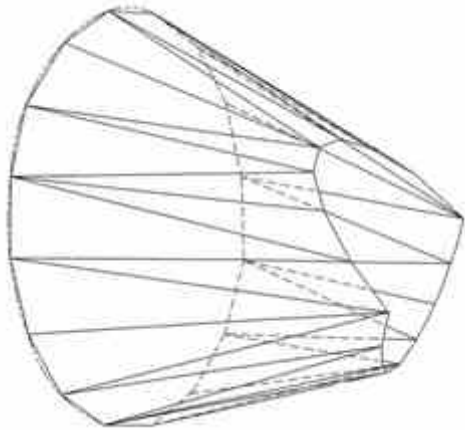
F02K 1/78

Other construction of jet pipes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



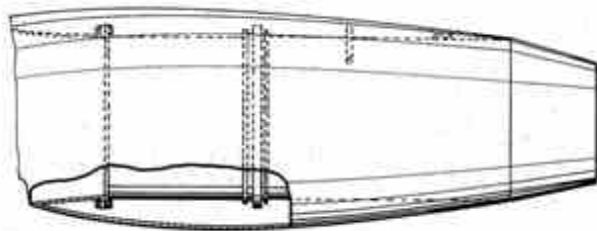
F02K 1/80

Couplings or connections

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



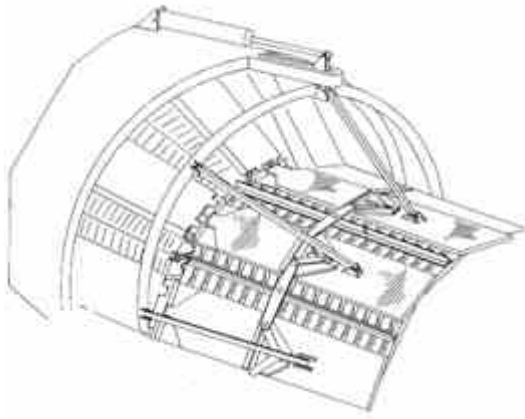
F02K 1/805

{Sealing devices therefor, e.g. for movable parts of jet pipes or nozzle flaps}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



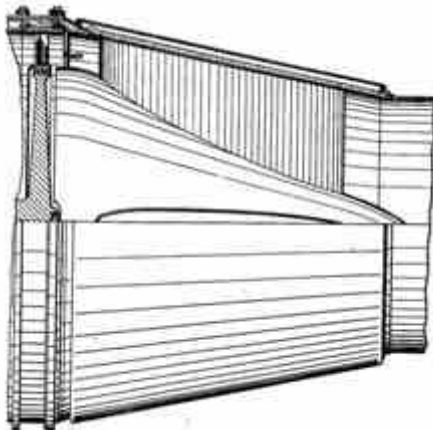
F02K 1/82

Jet pipe walls, e.g. liners

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



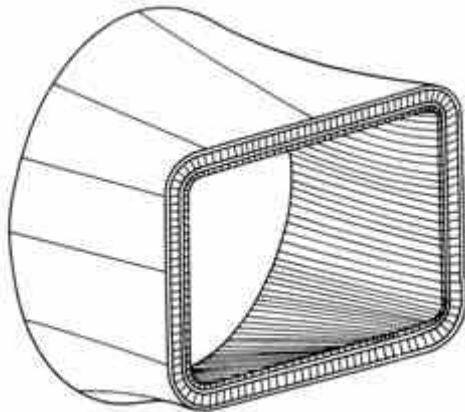
F02K 1/822

{Heat insulating structures or liners, cooling arrangements, e.g. post combustion liners; Infrared radiation suppressors}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



References

Informative references

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

Wall structures in combustion chambers	F23R 3/002
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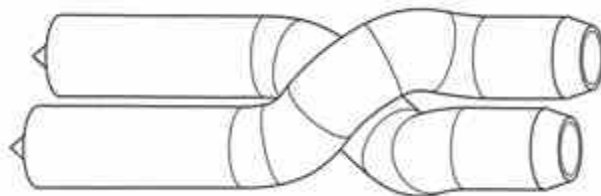
F02K 1/825

{Infrared radiation suppressors}

Definition statement

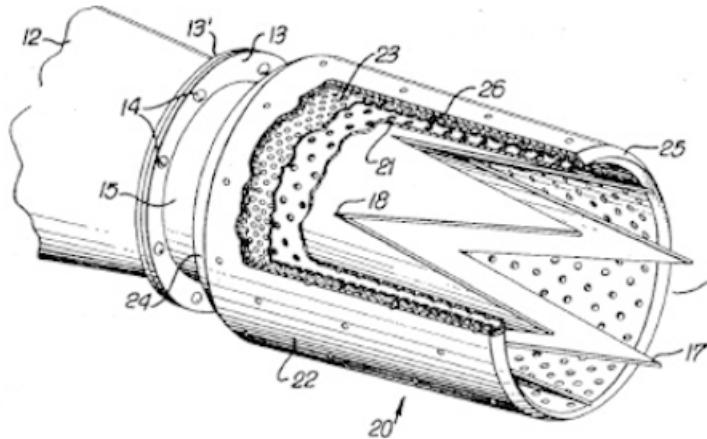
This place covers:

Illustrative example of subject matter classified in this group.



F02K 1/827**{Sound absorbing structures or liners}****Definition statement***This place covers:*

Illustrative example of subject matter classified in this group.

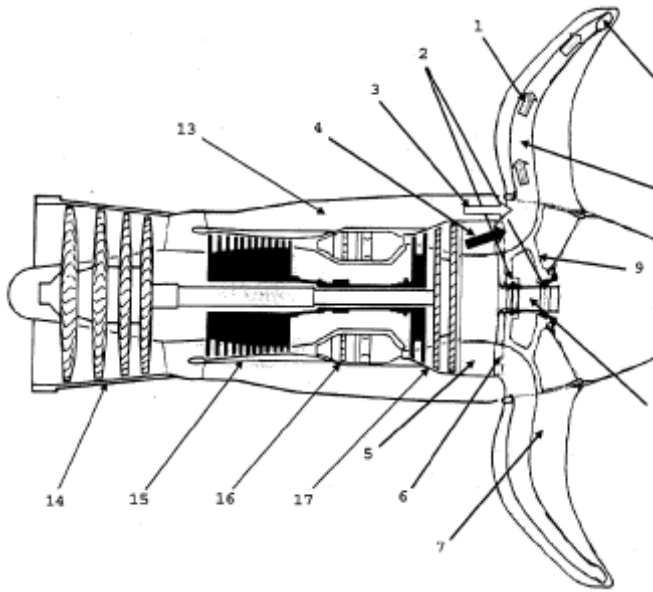
**References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Noise suppression in air intakes	F02C 7/045
Noise attenuators in general	G10K 11/00

F02K 3/00**Plants including a gas turbine driving a compressor or a ducted fan****Definition statement***This place covers:*

Mainly ducted gas turbine plants with ducted fans, whereby the main flow which is only slightly compressed by a fan or the like bypasses the core engine; Heating of the bypass flow; Afterburners.

Illustrative example of subject matter classified in this group.



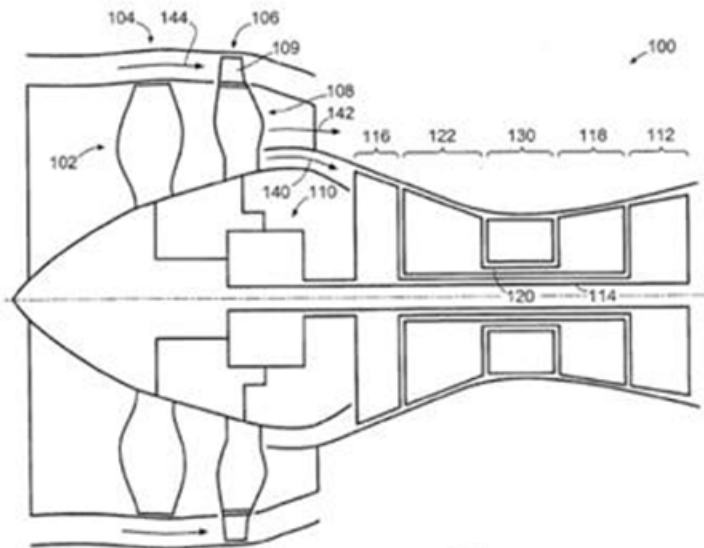
F02K 3/072

with counter-rotating {, e.g. fan} rotors

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



References

Informative references

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

Turbomachines with counter-rotating rotors	F01D 1/24
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Gas turbines having counter-rotating rotors	F02C 3/067
Axial flow pumps for elastic fluids with counter-rotating parts	F04D 19/024

F02K 3/08

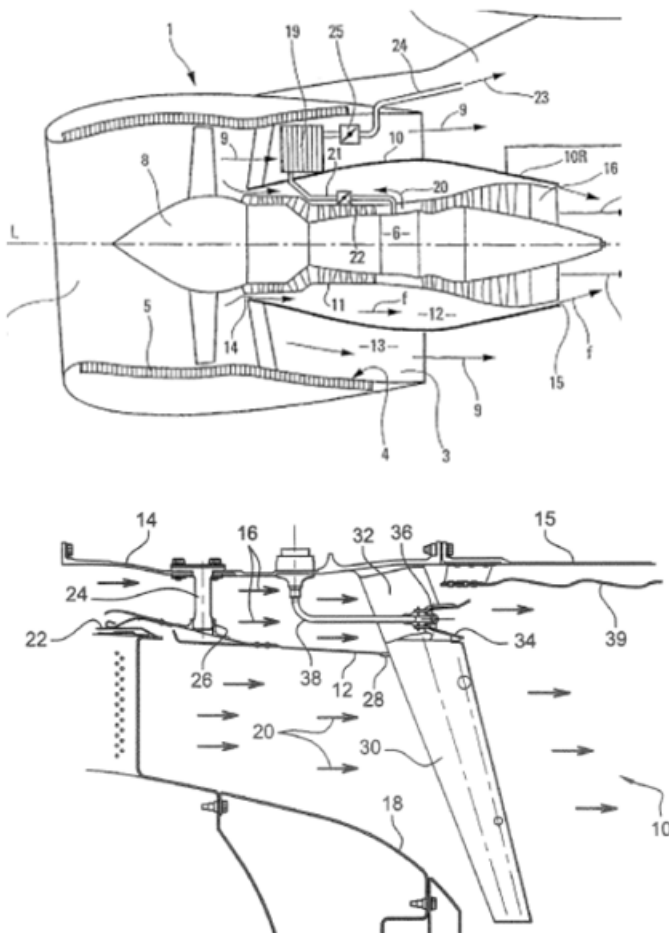
with supplementary heating of the working fluid; Control thereof (control of fuel supply therefor [F02C 9/26](#))

Definition statement

This place covers:

Heating of the working fluid, e.g. main working fluid or bypass flow, by heat exchangers or burners. These include after-burners.

Illustrative example of subject matter classified in this group.



References

Limiting references

This place does not cover:

Control of fuel supply therefor	F02C 9/26
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Informative references

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

After-burners, combustion chambers	F23R
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F02K 5/00

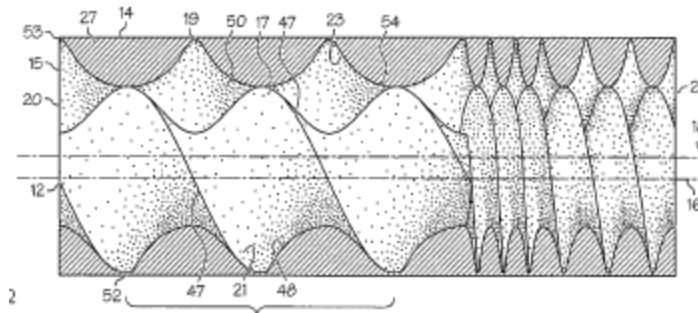
Plants including an engine, other than a gas turbine, driving a compressor or a ducted fan

Definition statement

This place covers:

Plants including an engine, other than a gas turbine, driving a compressor or a ducted fan.

Illustrative example of subject matter classified in this group.



F02K 7/00

Plants in which the working fluid is used in a jet only, i.e. the plants not having a turbine or other engine driving a compressor or a ducted fan; Control thereof (rocket-engine plants [F02K 9/00](#))

References

Limiting references

This place does not cover:

Rocket- engine plants, i.e. plants carrying both fuel and oxidant therefor; Control thereof	F02K 9/00
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Synonyms and Keywords

In patent documents, the following abbreviations are often used:

Ram jet	Compression of the working fluid caused by the engine's forward motion without a rotary compressor
Scram jet	Supersonic combustion ram jet

F02K 7/005

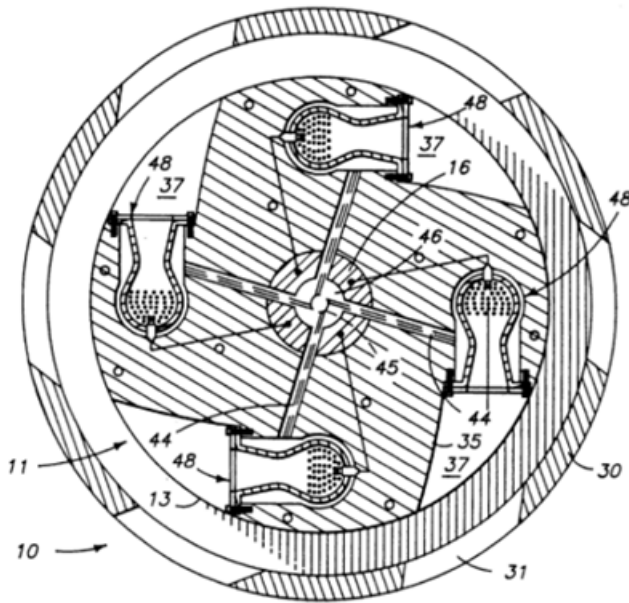
{the engine comprising a rotor rotating under the actions of jets issuing from this rotor}

Definition statement

This place covers:

Rotating rotors rotating due to the reaction force of the jets issued from the rotor.

Illustrative example of subject matter classified in this group.



References

Informative references

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

With pressure velocity transformation exclusively in rotor, e.g. the rotor rotating under the influence of jets issuing from the rotor	F01D 1/32
Rotating combustion chamber with the working fluid being a combustion product	F02C 3/165

F02K 9/00

Rocket-engine plants, i.e. plants carrying both fuel and oxidant therefor;
Control thereof

Definition statement

This place covers:

Rocket-engine plant related aspects such as solid and liquid propellant rocket plants; Constructional details of the charges; Supply and feeding of propellant; Starting and restarting.

References

Informative references

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

Cosmonautic vehicles	B64G 1/00
Chemical composition of propellants	C06B , C06D
Launching apparatus for rockets	F41F 3/04
Explosive charges, ammunition	F42B

F02K 9/08

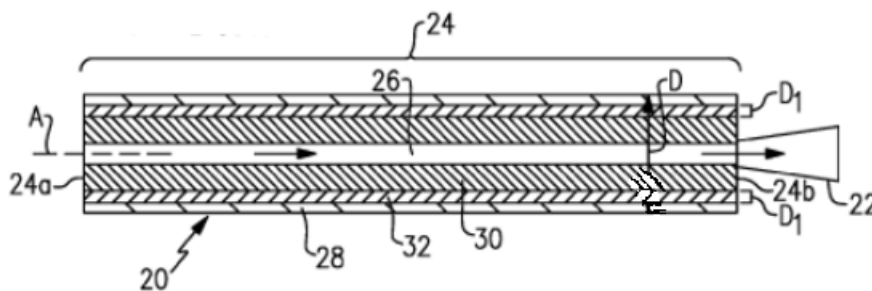
using solid propellants ([F02K 9/72](#) takes precedence; using semi-solid or pulverulent propellants [F02K 9/70](#))

Definition statement

This place covers:

Solid propellant rocket plants.

Illustrative example of subject matter classified in this group.



References

Limiting references

This place does not cover:

Using semi-solid or pulverulent propellants	F02K 9/70
Using liquid and solid propellants, i.e. hybrid rocket-engine plants	F02K 9/72

Informative references

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

Explosives or thermic compositions; Manufacture thereof; Use of single substances as explosives	C06B
Means for generating smoke or mist; Gas-attack compositions; Generation of gas for blasting or propulsion (Chemical part)	C06D
Cartridges for producing gas under pressure	F42B 3/04

F02K 9/32

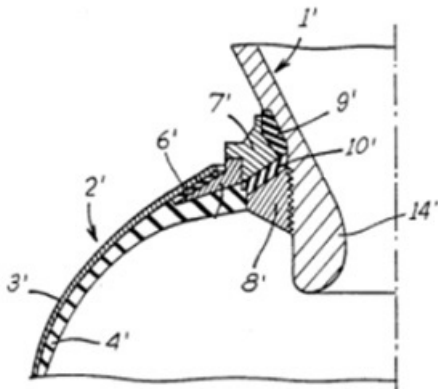
Constructional parts; Details not otherwise provided for

Definition statement

This place covers:

Solid propellant construction parts and details including: casings, liners, joints, seals, propellant supports, safety devices, and cooling arrangements.

Illustrative example of subject matter classified in this group.



References

Informative references

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

Shape or structure of solid propellant charges	F02K 9/10
Starting or ignition means or arrangements	F02K 9/95
Rocket nozzles	F02K 9/97

F02K 9/425

{Propellants}

Definition statement

This place covers:

Specific types of liquid or gaseous propellants, e.g. hypergolic propellants, methane, hydrogen peroxide.

References

Informative references

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

Explosives or thermic compositions; Manufacture thereof; Use of single substance as explosive	C06B
Means for generating smoke or mist; Gas-attack compositions; Generation of gas blasting or propulsion (Chemical part)	C06D

F02K 9/46

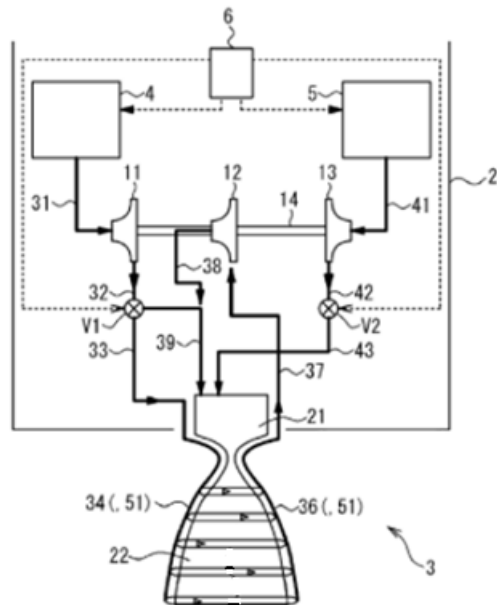
using pumps

Definition statement

This place covers:

Feeding propellants by the use of pumps, e.g. turbo-pumps.

Illustrative example of subject matter classified in this group.



References

Informative references

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

Control of propellant feed pumps	F02K 9/563
Pumps per se	F04

F02K 9/52

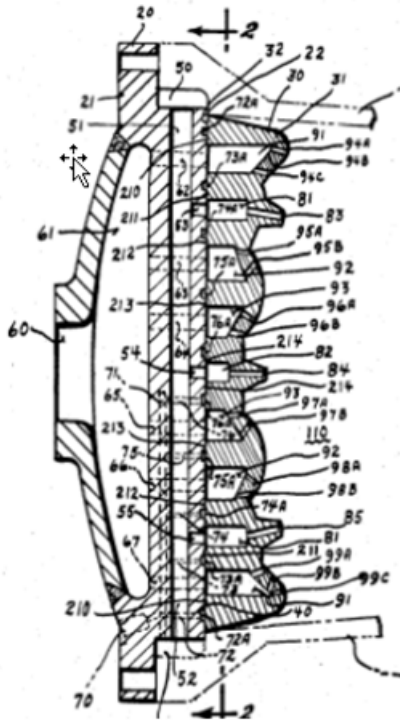
Injectors

Definition statement

This place covers:

Injectors for liquid or gaseous propellants.

Illustrative example of subject matter classified in this group.



References

Informative references

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

Spraying or atomising in general	B05B
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F02K 9/54

Leakage detectors; Purging systems; Filtration systems

References

Informative references

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

Filters per se	B01D
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F02K 9/58

Propellant feed valves

Definition statement

This place covers:

Control of rocket propellant feed valves.

References

Informative references

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

Valves in general	F16K
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F02K 9/60

Constructional parts; Details not otherwise provided for

Definition statement

This place covers:

Constructional parts or details of liquid or gaseous propellant rockets such as reservoirs, combustion chambers, decomposition chambers.

References

Informative references

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

Starting or ignition means or arrangements	F02K 9/95
Rocket nozzles	F02K 9/97