

F02F**CYLINDERS, PISTONS OR CASINGS, FOR COMBUSTION ENGINES;
ARRANGEMENTS OF SEALINGS IN COMBUSTION ENGINES****References*****Application-oriented references***

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Specially adapted for rotary-piston or oscillating-piston internal-combustion engines	F02B
Specially adapted for gas-turbine plants	F02C
Specially adapted for jet-propulsion plants	F02K

F02F 1/00**Cylinders; Cylinder heads****Definition statement**

This place covers:

Cylinders and cylinder heads for combustion engines

References***Informative references***

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

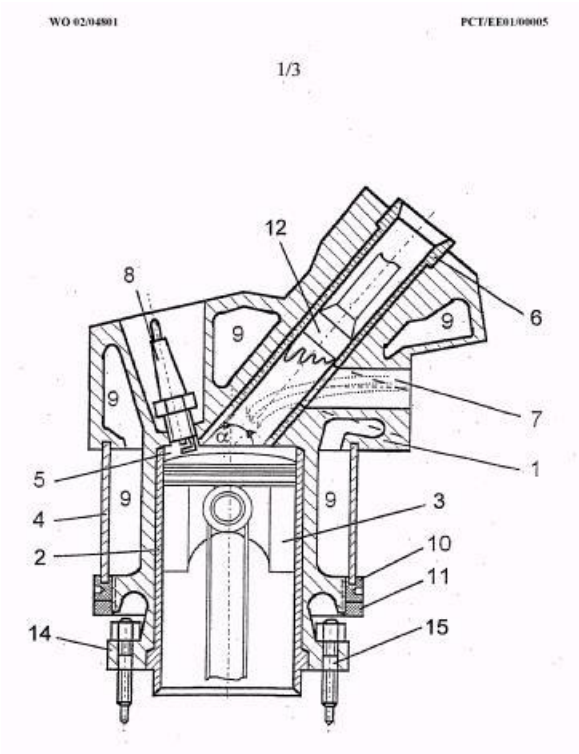
Cylinders and cylinder heads in general	F16J
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F02F 1/002

{Integrally formed cylinders and cylinder heads}

Definition statement

This place covers:
All applications of a single piece forming the cylinder and the cylinder head.



F02F 1/02

having cooling means (cylinder heads [F02F 1/26](#))

References

Limiting references

This place does not cover:

Cylinder heads	F02F 1/26
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Informative references

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

Cooling of cylinders or cylinder heads in general	F01P 1/02 and F01P 3/02
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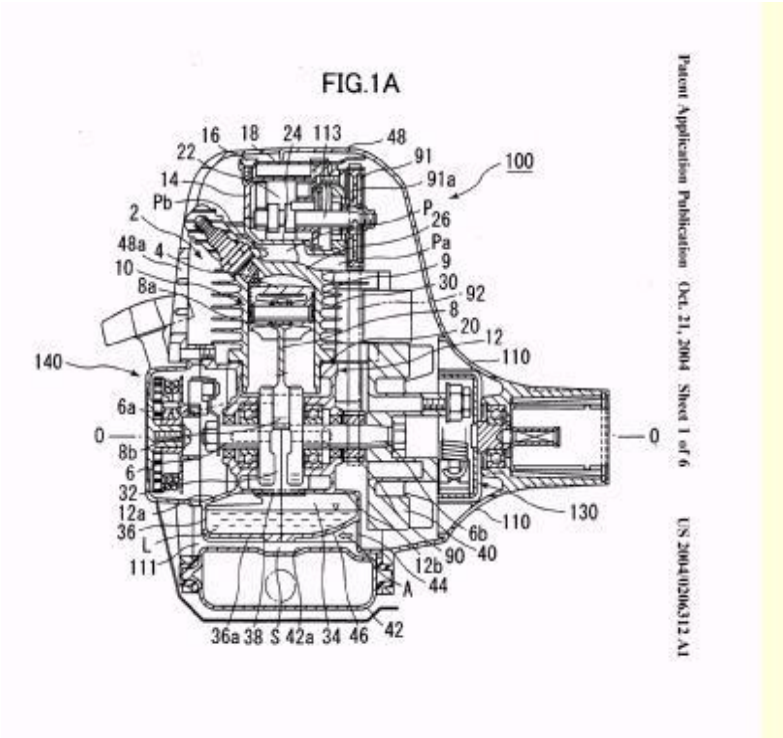
F02F 1/04

for air cooling

Definition statement

This place covers:

Means for air cooling of cylinder heads



References

Informative references

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

Air cooling of cylinders and cylinder heads	F01P 1/02
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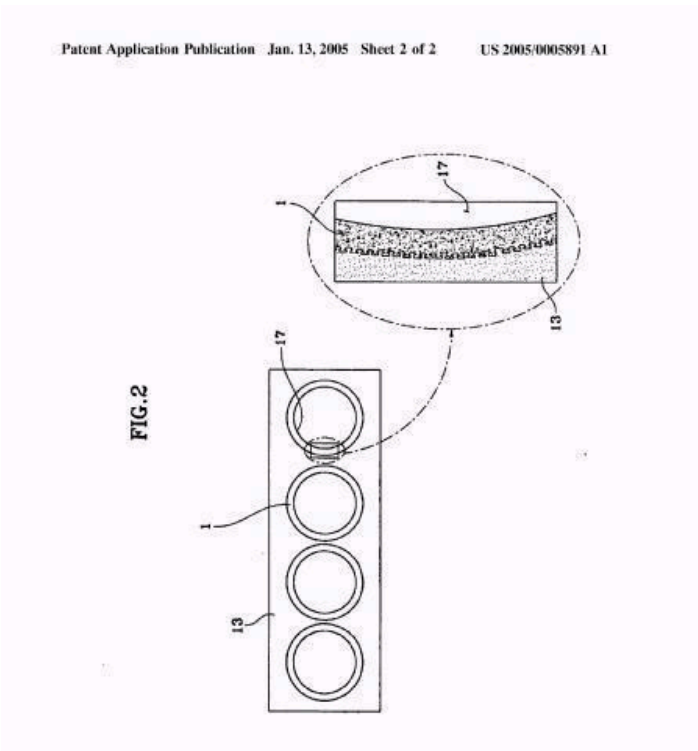
F02F 1/08

running-liner and cooling-part of cylinder being different parts or of different material

Definition statement

This place covers:

Running-liner and cooling-part of cylinder being different parts or of different material:



Only for air cooled engines, e.g. different materials used for the liners and the cooling fins.

F02F 1/10

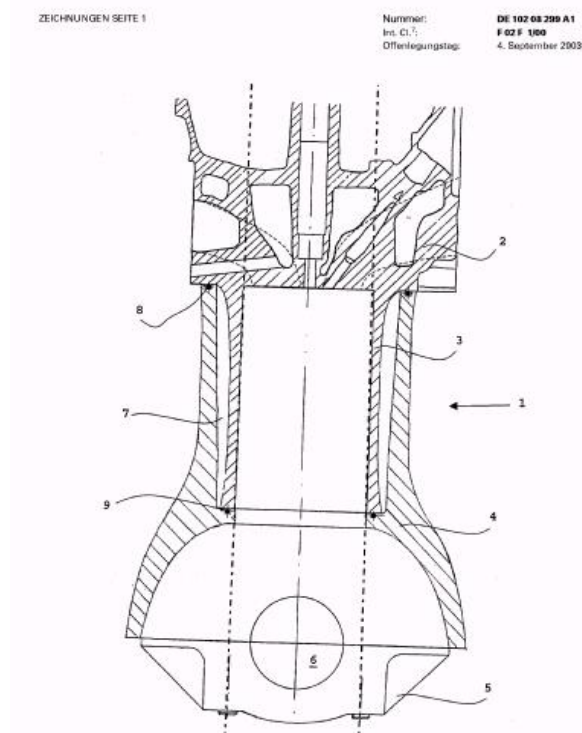
for liquid cooling

References

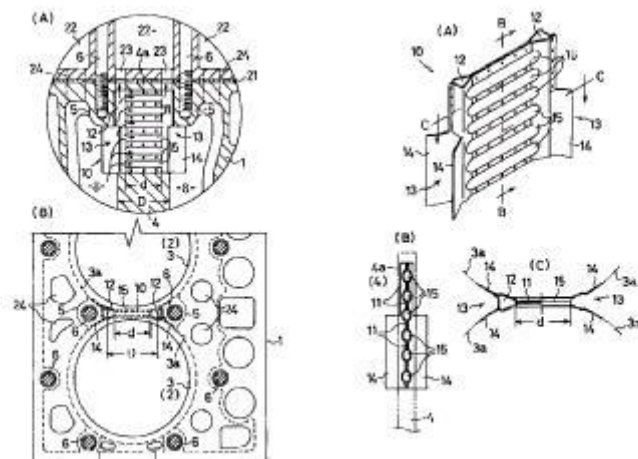
Informative references

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

Liquid cooling of cylinders and cylinder heads	F01P 3/02
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F02F 1/102**{Attachment of cylinders to crankcase}****Definition statement***This place covers:***F02F 1/108****{Siamese-type cylinders, i.e. cylinders cast together}****Definition statement***This place covers:*

Siamese-type cylinders, i.e. cylinders cast together:



References

Informative references

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

Arrangement for cooling cylinders or cylinder heads	F01P 3/02
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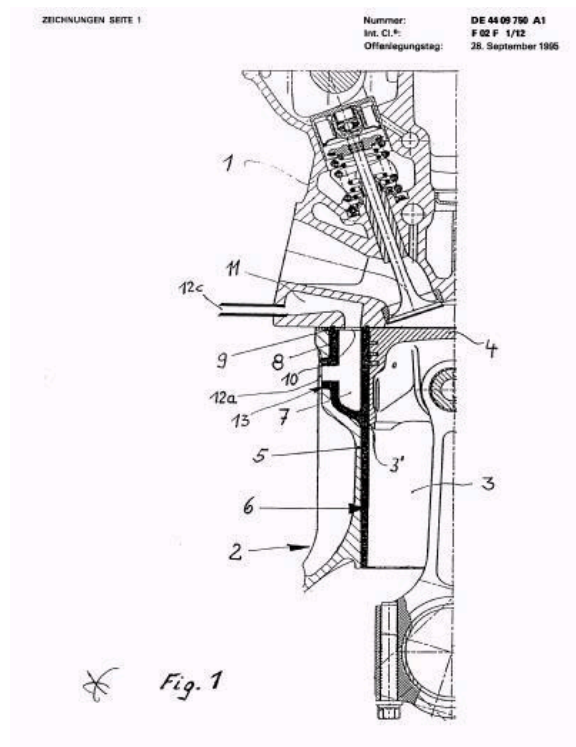
F02F 1/12

Preventing corrosion of liquid-swept surfaces

Definition statement

This place covers:

All measures taken for combating corrosion in water cooled engines.



References

Informative references

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

Engines with means for preventing corrosions of gas swept spaces	F02B 75/08
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F02F 1/186

{for use in engines with two or more pistons reciprocating within same cylinder}

References**Application-oriented references**

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Internal-combustion piston engines or combustion engines in general with two or more pistons reciprocating within same cylinder or within essentially coaxial cylinders	F02B 75/28
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F02F 1/4221

{particularly for three or more inlet valves}

References**Informative references**

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

Mechanisms for driving three or more intake valves per cylinder	F01L 1/265
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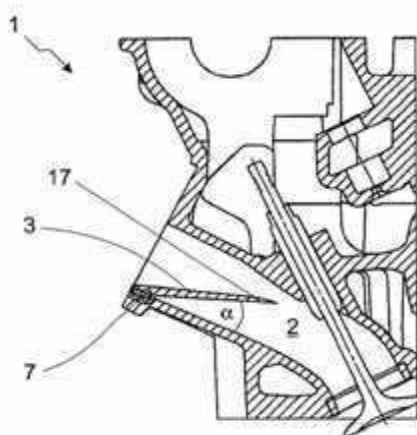
F02F 1/425

{with a separate deviation element inside the channel}

Definition statement

This place covers:

Separate deviation element inside the intake channel. E.g. a butterfly valve or an insert placed just before the valve seat.



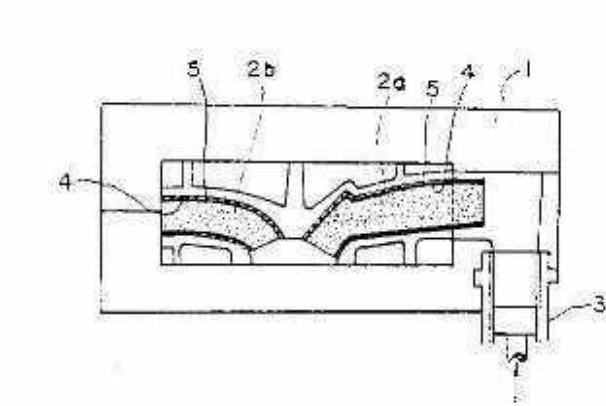
F02F 1/4292

{with liners ([F02F 1/4257](#), [F02F 1/4271](#) take precedence)}

Definition statement

This place covers:

Liners in both intake and exhaust channel.



References

Limiting references

This place does not cover:

Liners in intake channels only	F02F 1/4257
Liners in exhaust channels only	F02F 1/4271

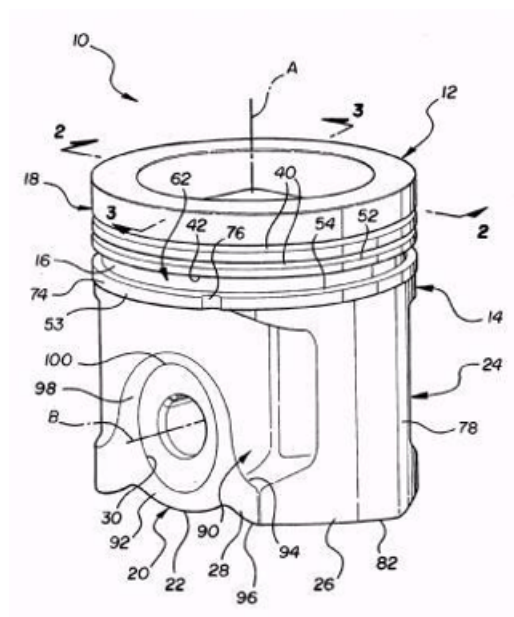
F02F 3/00

Pistons

Definition statement

This place covers:

Pistons for combustion engines:



References

Informative references

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

Pistons in general	F16J
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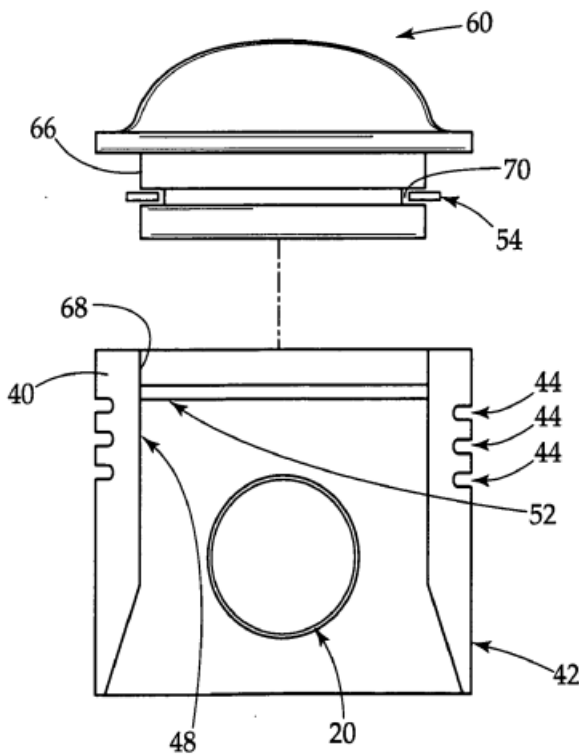
F02F 3/0015

{Multi-part pistons}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a multi-part piston assembly comprising a piston head (60) having a cylindrical member (66) that is inserted into an upper cylindrical opening (68) of a piston body (40) and secured via a locking ring (54) to the piston body (40).

F02F 3/02

having means for accommodating or controlling heat expansion

Definition statement

This place covers:

Structural elements in pistons for regulation of heat expansion, e.g. the shape of piston skirt walls or inserts located in the body of pistons.

References

Informative references

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

Multi-part pistons	F02F 3/0015
Pistons being constructed from specific materials	F02F 3/0084

F02F 3/04

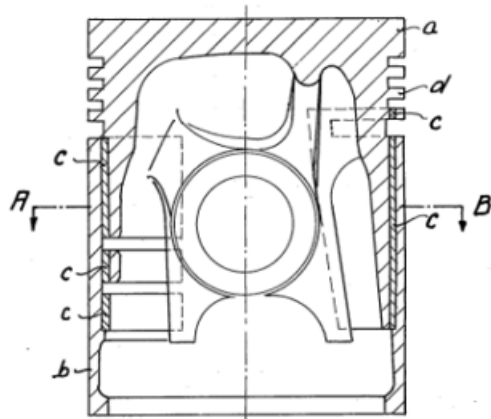
having expansion-controlling inserts

Definition statement

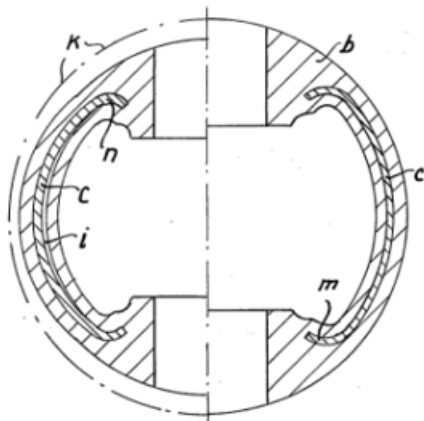
This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.

**F02F 3/045**

{the inserts being located in the crown}

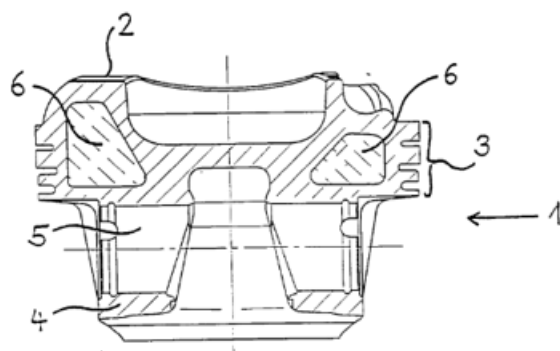
Definition statement

This place covers:

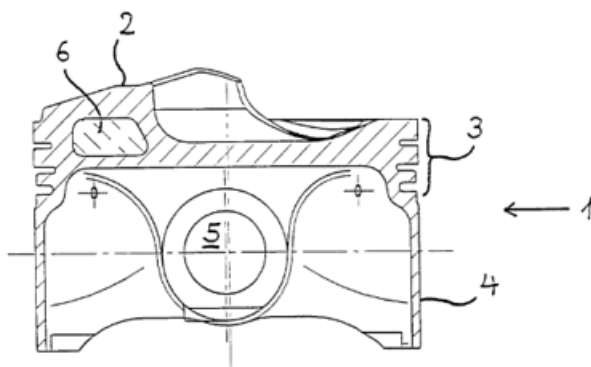
Illustrative example of subject matter classified in this place:

Definition statement

1a.

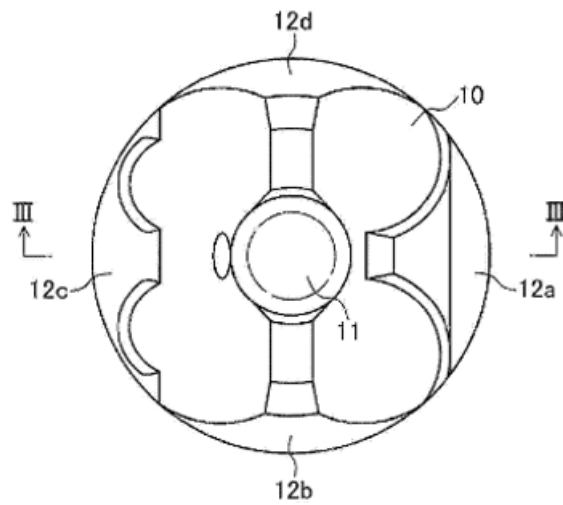


1b.

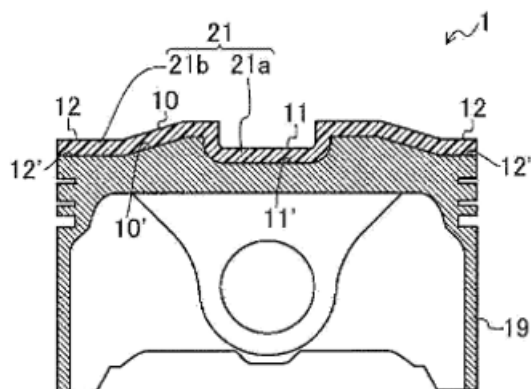
**F02F 3/14****within combustion chambers****Definition statement***This place covers:*

Illustrative example of subject matter classified in this place:

1a.



1b.



F02F 3/16

having cooling means

Definition statement

This place covers:

Structural features, e.g. fins, apertures and arrangements for dissipating heat

References

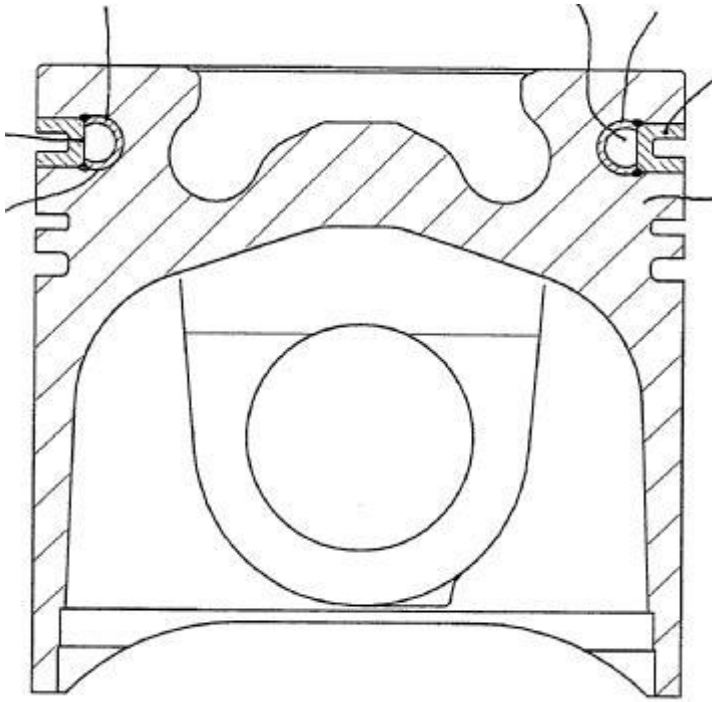
Informative references

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

Air cooling arrangements for pistons	F01P 1/04
Liquid cooling arrangements for pistons	F01P 3/06

F02F 3/22**the fluid being liquid****Definition statement***This place covers:*

Liquid cooling means:

**Synonyms and Keywords***In patent documents, the following words/expressions are often used as synonyms:*

- "cooling channel cover" and "ring carrier"

F02F 5/00**Piston rings, e.g. associated with piston crown****Relationships with other classification places**

Details of piston rings or related details of the pistons, piston crowns or cylinders are classified in group [F16J 9/00](#).

F02F 7/00**Casings, e.g. crankcases****Definition statement***This place covers:*

Combustion engine casings, e.g. crankcases or frames, e.g. rigid supports for cylinders or crankcases.

References

Informative references

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

Engine casings in general	F16M
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F02F 7/006

{Camshaft or pushrod housings}

References

Informative references

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

Oil sump details	F01M 11/0004
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F02F 7/008

{Sound insulation}

References

Informative references

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

Acoustic insulation for internal-combustion piston engines or combustion engines in general	F02B 77/13
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F02F 11/00

Arrangements of sealings in combustion engines {(piston rings or ring sealings of similar construction [F16J 9/00](#))}

Definition statement

This place covers:

Arrangement of sealings in combustion engines

References

Limiting references

This place does not cover:

Piston rings for combustion engines	F16J 9/00
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Informative references

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

Sealings per se	F16J
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F02F 2200/06**Casting****References*****Informative references***

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

Monolithic pistons, one piece constructions or casting of pistons	F02F 2003/0007
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