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— *with international search report (Art. 21(3))*

[Continued on next page]

(54) **Title**: TWO-STROKE INTERNAL COMBUSTION ENGINE WITH REDUCED THERMAL DISPERSION

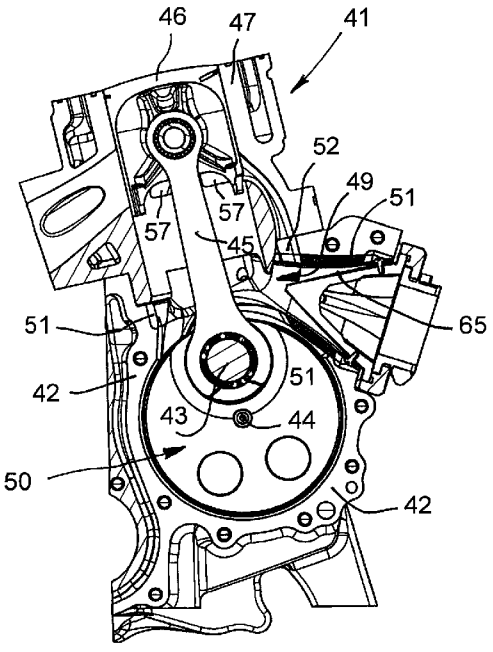

Fig. 2

(57) **Abstract**: An improved two-stroke internal combustion engine with reduced thermal dispersion, comprising a cylinder, a piston and a motor shaft, and presents a suction insert (11, 51) with insulating coating, inserted or made in the motor housing (2, 52) or in the pump housing (10, 50) to coat the suction duct of the air (9, 49); the insulating coating of the fluid sucked towards the metallic wall of the duct extends also in the initial part of the transfer ducts. Different constructive forms of insulating coating in the suction duct, in the exhaust duct, in the transfer duct and in the stratification duct are presented.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2013/000014

A. CLASSIFICATION OF SUBJECT MATTER
INV. F02M35/10 F02F1/42 F02B25/14
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F02M F02F F02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/139326 A1 (ARAKI TSUNEO [JP]) 3 October 2002 (2002-10-03) paragraph [0074] - paragraph [0083]; figure 7	1
A	US 2003/075123 A1 (ARAKI TSUNEO [JP] ET AL) 24 April 2003 (2003-04-24) paragraph [0036] - paragraph [0048]; figures 1-5	1
A	US 3 604 403 A (LARSON MARVIN P) 14 September 1971 (1971-09-14) column 4, line 39 - column 5, line 45; figures 4-11	1
A	FR 2 676 015 A1 (OUTBOARD MARINE CORP [US]) 6 November 1992 (1992-11-06) page 7, line 24 - page 8, line 23; figures 1-5	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 June 2013	18/11/2013

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IT2013/000014

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7, 13-15

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7, 13-15

   2T stroke IC engine with a suction insert with insulating coating into engine or pumping housing wherein the insulating coating extends in the initial part of the transfer ducts.

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2. claim: 8

   2T IC engine and cylinder with an insulating insert in the exhaust duct.

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3. claims: 9, 11

   2T IC engine and cylinder with an insulating insert in the transfer duct.

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4. claims: 10, 12

   2T IC engine and cylinder with an insulating insert in the stratification duct.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT2013/000014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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