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(54) Title: APPARATUS AND METHOD FOR SURFACE TREATING A PIPE

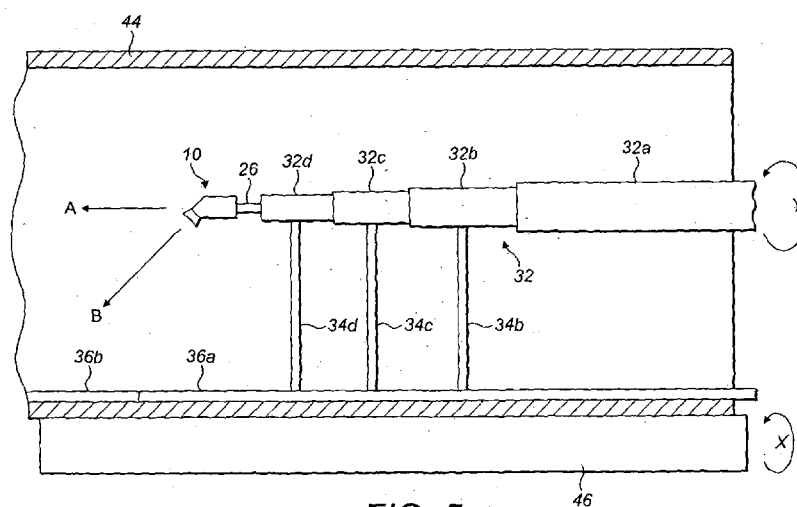


FIG. 5

(57) Abstract: A surface treatment apparatus and method are disclosed for treating the inside surface of a pipe (44), for example by applying a metal coating, the apparatus comprising a treatment head (10) mounted on a boom (32) for insertion into the pipe. The apparatus is suitable for insertion into a riser pipe for an oil or gas well, and preferably comprises an arc wire spraying gun.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2013/050108

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16L58/08 C23C4/14 F16L58/10
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)
F16L C23C

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.
X	EP 0 119 095 A2 (INDUCTALLOY CORP [US]) 19 September 1984 (1984-09-19)	1-3,5-8, 13,22, 23, 29-31, 33-39,44
Y	abstract; figures	4,14-16, 32
X	----- US 5 413 638 A (BERNSTEIN JR PHILIP [US] ET AL) 9 May 1995 (1995-05-09) column 3, line 17 - line 29 -----	1-3
Y	DE 103 01 813 B3 (DAIMLER CHRYSLER AG [DE]) 19 August 2004 (2004-08-19) abstract; figures ----- -/-	4,14-16, 32



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

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2007 009600 A1 (LINDE AG [DE]) 28 August 2008 (2008-08-28) abstract; figures -----	1,15
X	US 3 189 001 A (THOMA ALBERT J ET AL) 15 June 1965 (1965-06-15) column 6, line 70 - line 74 -----	44,46-48

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2013/050108

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.:

1-8, 13-16, 22, 23, 29-39, 44, 46-48

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: 1-8, 13-16, 22, 23, 29-39, 44, 46-48

An apparatus according claim 1 is known, from document D1: EP0119095. The apparatus disclosed in this document shows also the features of claims 2 and 3. The special technical feature of the first group of inventions is the feature of claim 4, that the treatment head is an arc wire spraying gun. This feature solves the technical problem of finding a possibility to coat the internal surface of a pipe with a metal substrate.

2. claims: 1, 9-12, 40, 41, 45

The special technical feature of the second group of invention is the feature of claim 9, that the apparatus comprises a flame spraying gun for applying a polymer layer to the inside surface of the pipe.

The special technical problem that is solved by this special technical feature can be considered as to find an apparatus for coating the inside of a pipe with a polymer layer.

3. claims: 1, 17-21

The special technical feature of the third group of inventions is the feature of claim 17, that the boom height can be adjusted. This special technical feature solves the problem of coating different length of pipes.

4. claims: 1, 24, 25

The special technical feature of the forth group of invention is that the apparatus is controlled by a programmable logic controller. The problem solved by this feature can be regarded as finding a way to control the apparatus in an effective manner.

5. claims: 1, 26-28, 42, 43

The special technical feature of the fifth group of inventions is that the apparatus comprises extraction means for extracting unwanted particles from inside the pipe. The problem solved by this technical feature can be seen as to clean the inside of the pipe before coating.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2013/050108

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		EP 0119095 A2	19-09-1984
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