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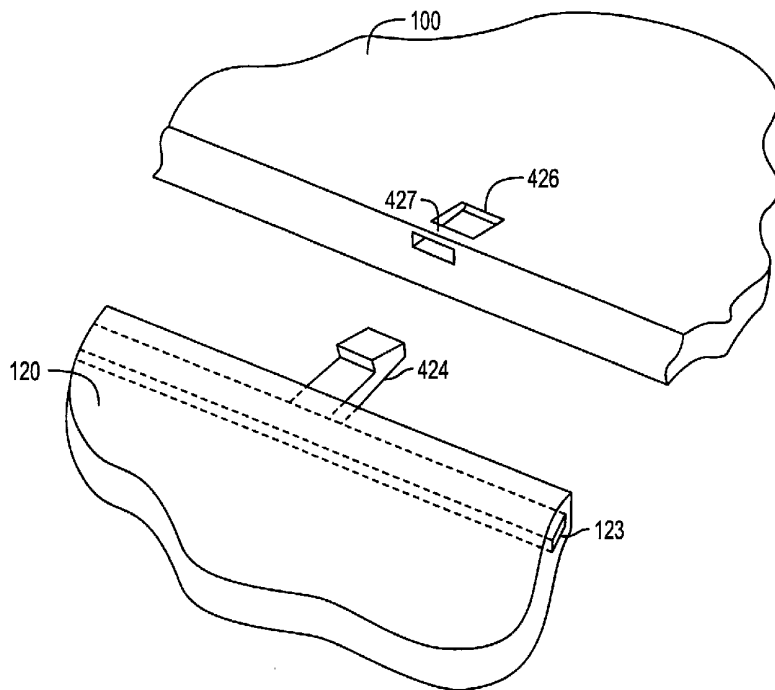
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[Continued on next page]

(54) Title: RESPIRATOR MASK



(57) Abstract: A respirator mask seal and shell are provided according to one embodiment of the invention. The respirator mask seal and shell includes a mask shell having a face opening, a slot for air passage, and at least one attachment portion spaced around the face opening. They also include a movable interface having a hose connector and a contoured opening adapted to fit against the mask shell. The contoured opening is slidable over the slot and is capable of being positioned on the mask shell. The mask seal has a flexible sidewall having distal and proximal ends and includes a rounded outer seal portion located on the distal end of the sidewall, a rounded inner seal portion located between the distal and proximal ends, and a support ring embedded in the sidewall. The inner seal portion is thicker than the outer seal portion and is non-continuous. The support ring includes at least one attachment portion adapted to engage the at least one attachment portion of the

mask shell. The mask seal is capable of being removably affixed to the mask shell. The movable interface is capable of being positionally adjusted on the mask shell and the mask seal is capable of being inwardly deformed by contact with a face region of the user.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/24406

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61M16/06

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)

IPC 7 A61M

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 practical, search terms used)

EP0-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 04310 A (RESMED LTD ; KWOK PHILIP RODNEY (AU); STYLES ROBERT EDWARD (AU)) 5 February 1998 (1998-02-05) page 5, line 20 -page 6, line 22; figures 4-7	22-30
A	---	1-21
X	US 5 243 971 A (BRUDERER JAKOB W ET AL) 14 September 1993 (1993-09-14) cited in the application column 2, line 65 -column 3, line 5 column 4, line 34 -column 5, line 5; figure 5	22-24, 27-30
A	---	1,21
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

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

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"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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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/24406

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 4 907 584 A (MCGINNIS GERALD E) 13 March 1990 (1990-03-13) column 3, line 14 - line 26 column 7, line 26 - line 60 figures 2,4</p> <p style="text-align: center;">---</p>	1,21,22, 27
A	<p>US 5 724 965 A (STARR JOHN R ET AL) 10 March 1998 (1998-03-10) cited in the application column 4, line 48 -column 5, line 32; figures 4-7</p> <p style="text-align: center;">---</p>	1,21,22
A	<p>US 3 330 273 A (RAY BENNETT V) 11 July 1967 (1967-07-11) cited in the application column 4, line 5 - line 49 column 6, line 18 - line 27 figures 6,9</p> <p style="text-align: center;">---</p>	1,21-26
A	<p>DE 195 48 380 A (MAHLO HANS WOLFGANG DR) 4 July 1996 (1996-07-04) column 2, line 50 - line 64; figures</p> <p style="text-align: center;">---</p>	1
P,A	<p>EP 1 116 492 A (MAP GMBH) 18 July 2001 (2001-07-18) paragraphs [0027],[0028]; figures 4,5</p> <p style="text-align: center;">-----</p>	21,22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/24406

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:
1-20, 22-30 and partially 21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-20,22-30 and partially 21

A seal for a respirator mask comprising an embedded or over-molded support ring, further a respirator or a mask seal assembly comprising such a seal, further a method of creating such a seal assembly.

2. Claim : partially 21

A mask seal assembly comprising a shell, a seal and a plurality of attachment devices being selected from the group consisting of an extended portion of said seal either including a knob or forming a barb or having a hole

3. Claims: 31-34

A respirator mask comprising a movable interface

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/24406

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