
(12) PATENT ABRIDGMENT (11) Document No. AU-B-26206/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 620575

(54) Title
HEADGEAR

International Patent Classification(s)
(51)⁴ **A42B 007/00**

(21) Application No. : **26206/88**

(22) Application Date : **13.10.88**

(87) PCT Publication Number : **WO89/04124**

(30) Priority Data

(31) Number	(32) Date	(33) Country
8704271	02.11.87	SE SWEDEN

(43) Publication Date : **01.06.89**

(44) Publication Date of Accepted Application : **20.02.92**

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(56) Prior Art Documents
SE 425627
SE 387827

(57) Claim

1. Headgear to be worn on the head of a person, for the mounting of protective equipment, e.g. a visor; said headgear comprising a head band for encircling the head of the person and a crown support means; said head band including a brow band portion, side band portions and a neck band portion with said side band portions connecting said brow band portion to said neck band portion; said crown support means being connected to the head band and offering support against the crown of the person when the headgear is being worn, wherein the side band portions are curved upwardly and incline inwardly over at least a substantial portion of their curved section, so that upper edges of the side band portions are closer together than corresponding lower edges thereof, and wherein the side band portions extend downwardly at the back so that the neck band portion is located substantially lower than the brow band portion when the headgear is worn.

PCT

OPI DATE 01/06/89 APPLN. ID 26206 / 88
w. AOJP DATE 06/07/89 PCT NUMBER PCT/SE88/00535

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁴ : A42B 7/00	A1	(11) International Publication Number: 620575 WO 89/ 04124 (43) International Publication Date: 18 May 1989 (18.05.89)
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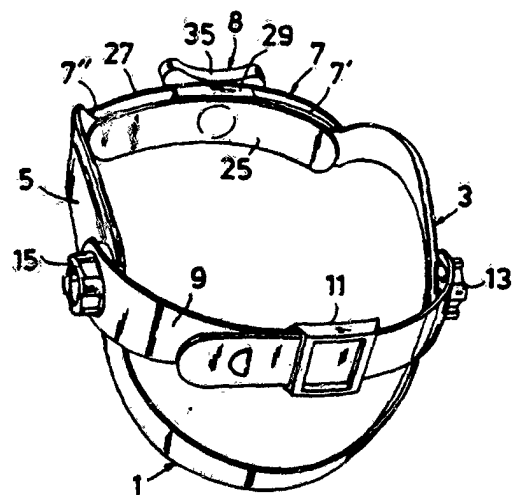
(21) International Application Number: PCT/SE88/00535
 (22) International Filing Date: 13 October 1988 (13.10.88)
 (31) Priority Application Number: 8704271-9
 (32) Priority Date: 2 November 1987 (02.11.87)
 (33) Priority Country: SE

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 (81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent), US.

Published
 With international search report.

(54) Title: HEADGEAR



(57) Abstract

Headgear for mounting protective equipment, e.g. a visor, said headgear comprising a head band encircling the head of a person and a crown band. The head band comprises a brow band portion (1), side band portions (3, 5) and a neck band portion (7). The side band portions are curved upwardly and incline inwardly, and extend downwardly at the back so that the neck band portion is located lower than the brow band portion when the headgear is worn. The inwardly inclined portions of the side bands are reinforced at their upper edge.

Headgear

5 TECHNICAL FIELD

The present invention relates to a headgear to be worn on the head of a person, for the mounting of protective equipment, e.g. a visor, said headgear comprising a head band encircling the head of the person and including a brow band portion, two side band portions and a neck band portion, and a crown support means, such as a crown band adjustable in length and connected to the head band and offering support against the crown when the headgear is being worn.

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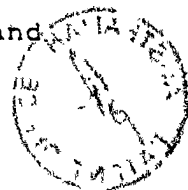
TECHNICAL BACKGROUND

Conventional headgears of the type described in the introduction have a head band the band plane of which is located substantially vertically around the loop formed by the head band. This loop lies in substantially a single plane. The head band has a homogeneous thickness. The neck band portion is usually provided with means enabling adjustment of the circumferential length of the head band, i.e. adjustment to different head sizes.

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Although headgears of this type often function satisfactorily, some people may find them uncomfortable to wear in view of an inadequate adjustability to the shape of the head. Furthermore, headgears of this type are often easily dislodged if the person wearing the headgear moves the head carelessly particularly if he inclines the head considerably. In order to solve this latter problem it has been suggested to provide the headgear with extra retaining bands secured to the head band and cooperating with lower portions of the nape of the neck. However, a solution of this kind is not good with regard to the possibilities of simple adjustment and fitting of the headgear.

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Another problem with the known headgears is the fact that they unfavourably affect the wearer's possibilities to use spectacles, earmuffs, etc. since there is disturbing interference in the region of each ear.

5 OBJECT OF THE INVENTION

The object of the present invention is to provide an improved headgear of the type described in the introduction, whereby the drawbacks and problems discussed above are alleviated to a great extent.

10 SUMMARY OF THE INVENTION

According to the present invention, there is provided headgear to be worn on the head of a person, for the mounting of protective equipment, e.g. a visor; said headgear comprising a head band for encircling the head of the person and a crown support means; said head band including a brow band portion, side band portions and a neck band portion with said side band portions connecting said brow band portion to said neck band portion; said crown support means being connected to the head band and offering support against the crown of the person when the headgear is being worn, wherein the side band portions are curved upwardly and incline inwardly over at least a substantial portion of their curved section, so that upper edges of the side band portions are closer together than corresponding lower edges thereof, and wherein the side band portions extend downwardly at the back so that the neck band portion is located substantially lower than the brow band portion when the headgear is worn.

The side band portions preferably curve upwardly directly from the connection point with the brow band portion. The latter is also preferably curved to a certain extent at the ends, thus giving a gently curved rounded transition between the brow band portion and the side band portions.

35 The upwardly curved, inwardly inclined side band portions have been found to result in the headgear fitting well and uniformly around the entire head and offering an extreme-



ly good fit irrespective of the size and shape of the head. The curved shape also means that the side band portions are "cut high" above the ears, thus leaving the ears free for cooperation with the side pieces of a pair of glasses, earmuffs, etc. This also allows earmuffs, for instance, to be carried by the headgear.

The headgear is suitably provided with a tensioning mechanism in the neck portion, enabling adjustment of the length of the head band. It has been found that the curved, inwardly inclined side band portions offer still better fit to the head, thereby increasing comfort, when adjusting the length of the head band with the tensioning mechanism, if the side band portions are reinforced at their upper edge. Advantageously, such reinforcement can be achieved by making the side band portions thicker at their upper edge, i.e. by means of an external rib, bead or the like. It is also feasible for the side band portions to increase in thickness more or less continuously from the lower to the upper edge.

The upward curve of the side band portions allows the brow band to be placed low down on the brow. Together with the neck band portion, located even lower, this means that the headgear according to the invention stays very firmly on the wearer's head.

The invention will be described more fully in the following with reference to an embodiment shown by way of example, with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematically perspective view of a headgear in accordance with the invention, seen at an angle from above.

Figure 2 is a schematic side view of the headgear according to Figure 1.

Figure 3 is a side view of a head-band blank.

Figure 4 is a view from below of the blank according to Figure 3.

Figures 5a-5j show different sections through the blank according to Figure 3.

DESCRIPTION OF EMBODIMENT

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The headgear shown in the drawings comprises a head band and a crown band. The head band comprises a brow band portion 1, two side band portions 3, 5 and a neck band portion 7. The head band is made in one piece of an injection moulded band element (see Figures 3 and 4) with the exception of the conventional tensioning mechanism 8 in the neck band portion 7. The parts of the injection moulded band element forming the neck band portion are designated 7' and 7" (see Figure 3 in particular).

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The crown support 9 is of conventional design and includes a tensioning means 11 in the form of a slide fastener. The two ends of the crown band 9 are pivotally connected, also in a conventional manner, to attachments 13, 15 on the front parts of the side band portions. The attachments 13, 15 are also designed for the attachment of protection means such as a visor, to be carried on the headgear. The attachments are conventional and need not therefore be further described here.

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The brow band portion 1 is located substantially in a vertical plane (relative to the normal position of use on a person with his head upright) although inclined slightly backwards and with its two ends bent somewhat back from this plane at the rounded transition to the side band portions 3, 5. The ends are also somewhat upwardly curved, thus producing a certain concave arc form as shown in Figure 3. This ensures a good fit to the special shape of the side band portions.

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As is clear in Figures 2 and 3, in particular, the side band portions 3, 5 curve upwardly in a convex arc which can be roughly considered as part of a circle arc (with a typical radius of the order of 10 cm). The rear, downwardly extending ends 3', 5' of the side band portions are extended

so that the connecting neck band parts 7', 7" will lie at a considerably lower level than the brow band portion 1. This level difference is intimated in Figure 3 at 17.

5 The curved side band portions 3, 5 incline inwardly along most of their length, i.e. the upper edges are closer together than the corresponding lower edges. This inclination is clearest in Figures 4 and 5. The inclination is greatest at the mid-portion of the band portions and decreases in both directions, substantially disappearing before the transitions
10 to the brow and neck band portions, respectively. Maximum inclination in relation to the vertical plane may be typically between 20 and 30°.

The head band is made of a plastic material having a suitable combination of shape permanence and flexibility. In
15 view of the special design of the side band portions and the fact that using the tensioning means to tighten the neck band portion entails a certain influence on the side band portions, it has been found advantageous for the inwardly inclined portions of the side bands to be reinforced at the
20 upper edge. The upper edge has therefore been provided with an external rib or bead 21, the thickness of which increases with the inward inclination.

The neck band parts 7', 7" are substantially vertical, with horizontal extension, and substantially parallel to the
25 brow band portion 1. The parts 7', 7" define a marked angle α to the direction of the ends of the side band portions 3, 5 (Figure 3). The parts 7', 7" are also folded in towards each other, transversely to the side band portions, so that they are close together and can be mutually displaced longitudinally in the tensioning mechanism 8.
30

The tensioning mechanism 8 is of conventional design and consists of an inner, flexible neck-supporting band part 25, an outer support part 27 and an intermediate part 29 provided with a pinion (not shown) and through which the parts
35 7' and 7" pass. The pinion engages with corresponding upper and lower racks 31 and 33 on the parts 7' and 7" (see Figure

3) and can be rotated by a knob 35. When the pinion is rotated, the parts 7' and 7" are moved in opposite directions. The knob 35 can thus be used to adjust the mutual position between the parts 7' and 7", thus adjusting the fit of the headgear to the wearer's head. The parts 7' and 7" are screwed as far apart as possible in the position shown in Figure 1.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Headgear to be worn on the head of a person, for the mounting of protective equipment, e.g. a visor; said headgear comprising a head band for encircling the head of the person and a crown support means; said head band including a brow band portion, side band portions and a neck band portion with said side band portions connecting said brow band portion to said neck band portion; said crown support means being connected to the head band and offering support against the crown of the person when the headgear is being worn, wherein the side band portions are curved upwardly and incline inwardly over at least a substantial portion of their curved section, so that upper edges of the side band portions are closer together than corresponding lower edges thereof, and wherein the side band portions extend downwardly at the back so that the neck band portion is located substantially lower than the brow band portion when the headgear is worn.

2. Headgear as claimed in claim 1, wherein at least over a substantial portion of their inwardly inclined section, the side band portions are reinforced at their upper edge.

3. Headgear as claimed in claim 2, wherein the side band portions are reinforced at their upper edge by being made thicker at their upper edge.

4. Headgear as claimed in claim 3, wherein the side band portions have an upper edge region which is made thicker by being provided with an external rib, bead or the like.

5. Headgear as claimed in claim 1, wherein each side band portion has a moulded-in inclination towards the other side band portion.

6. Headgear as claimed in any one of the preceding claims, wherein the brow band portion, at each end thereof, has a transition to a respective side band portion which transition is upwardly curved so that the curve of the side band portion constitutes a direct continuation thereof, thus giving a gently rounded transition between the brow band portion and the side band



portion.

7. Headgear as claimed in any one of the preceding claims, wherein said crown band means is a crown band which is adjustable in length.

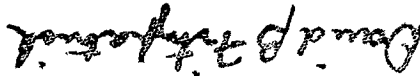
5 8. Headgear as claimed in claim 1, substantially as herein described with reference to the accompanying drawings.

DATED: 5 December 1991

PHILLIPS ORMONDE & FITZPATRICK

10 Attorneys for:

BILSOM AB



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Fig. 1

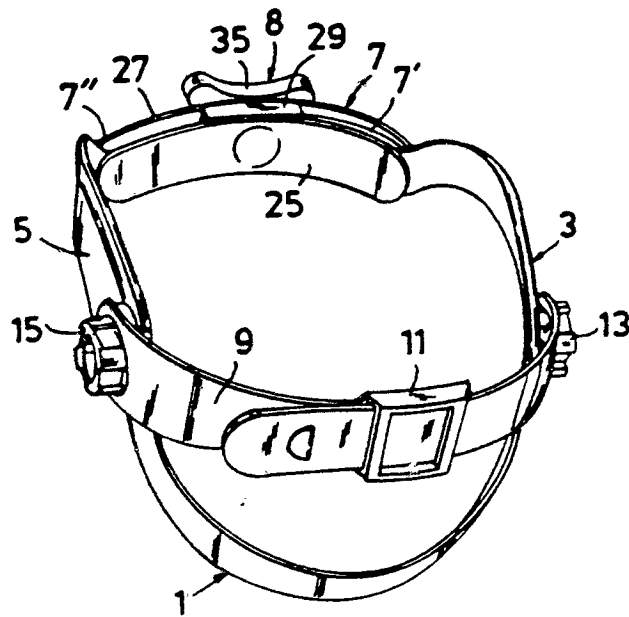


Fig. 2

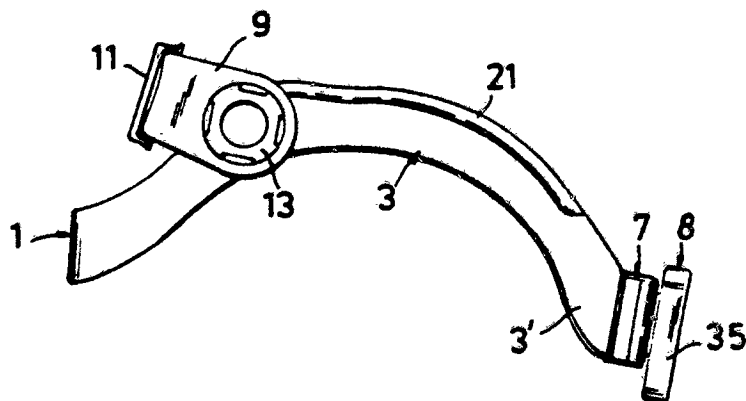


Fig. 3

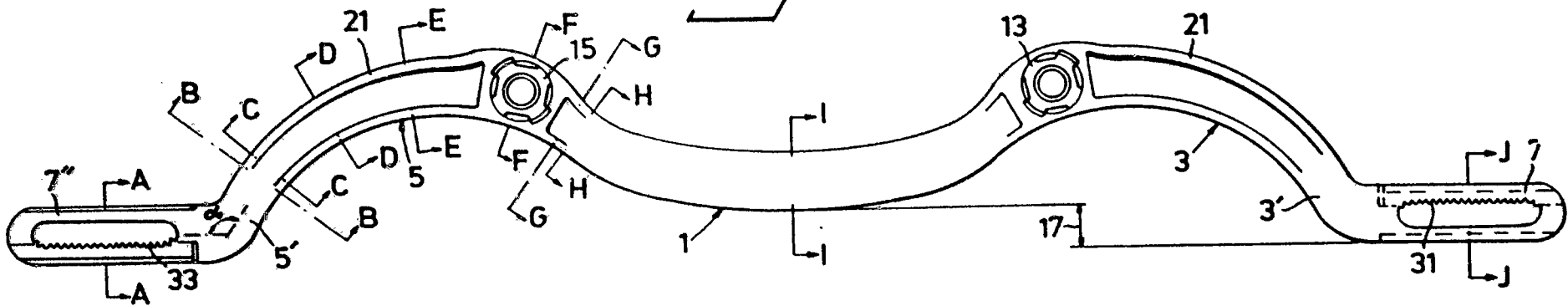


Fig. 4

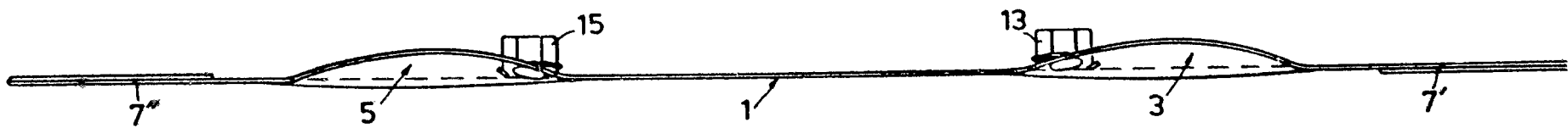
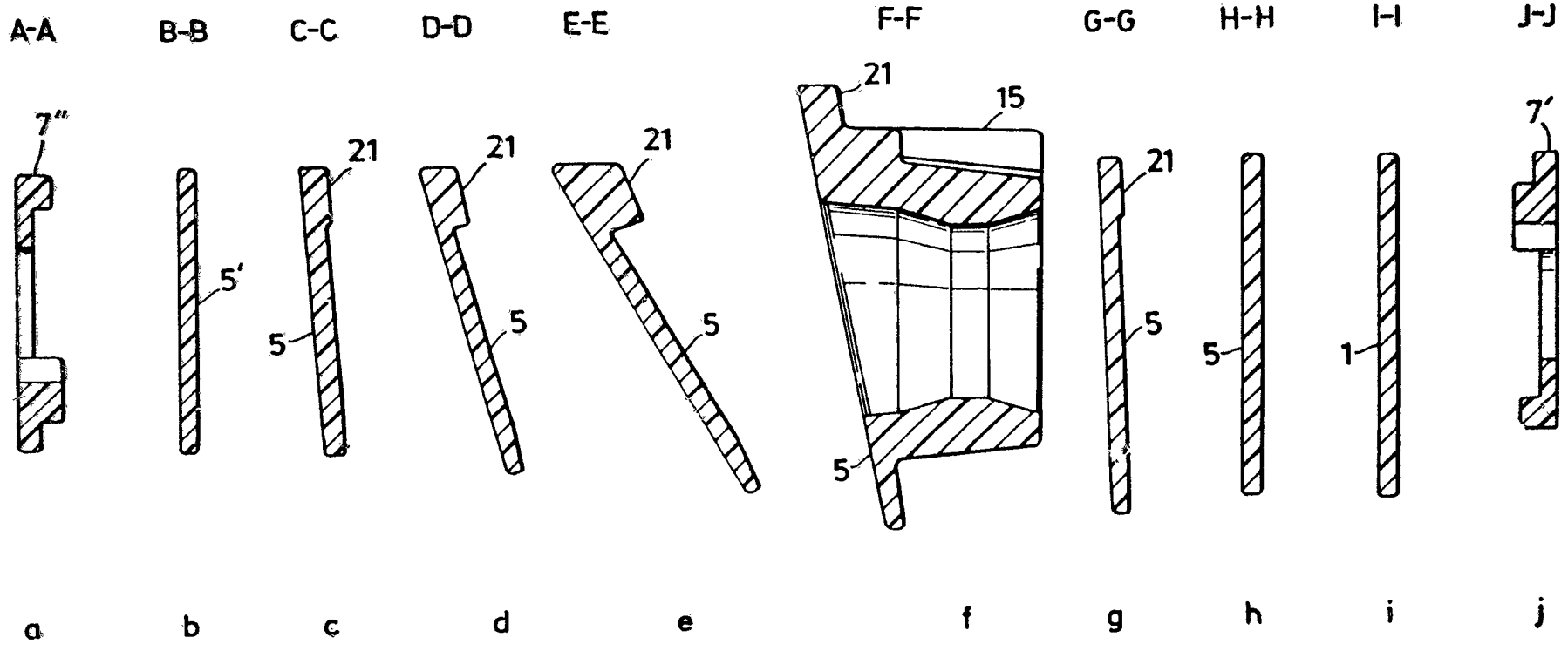


Fig. 5



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE88/00535

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply indicate all)				
According to International Patent Classification (IPC) or to both National Classification and IPC ⁴				
IPC 4: A 42 B 7/00				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁷				
Classification System	Classification Symbols			
IPC 4	A 42 B 3/00, 7/00; A 61 F 9/04, /06			
US CI	2: 10, 12, 410-421			
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the fields searched ⁸				
SE, NO, DK, FI classes as above				
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹				
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No ¹³		
A	SE, B, 425 627 (ARISARA INVESTMENT CORP.) 25 October 1982			
A	SE, B, 387 827 (ESAB AB) 20 September 1976			
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <p>¹⁰ Special categories of cited documents</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; border: none; vertical-align: top;"> <p>"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</p> <p>"X" document of particular relevance the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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</p> <p>"A" document member of the same patent family</p> </td> </tr> </table>			<p>¹⁰ Special categories of cited documents</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"X" document of particular relevance the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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</p> <p>"A" document member of the same patent family</p>
<p>¹⁰ Special categories of cited documents</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"X" document of particular relevance the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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</p> <p>"A" document member of the same patent family</p>			
IV. CERTIFICATION				
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report			
1989-01-16	1989-01-25			
International Searching Authority	Signature of Authorized Officer			
Swedish Patent Office	Lenå Hagstrom			