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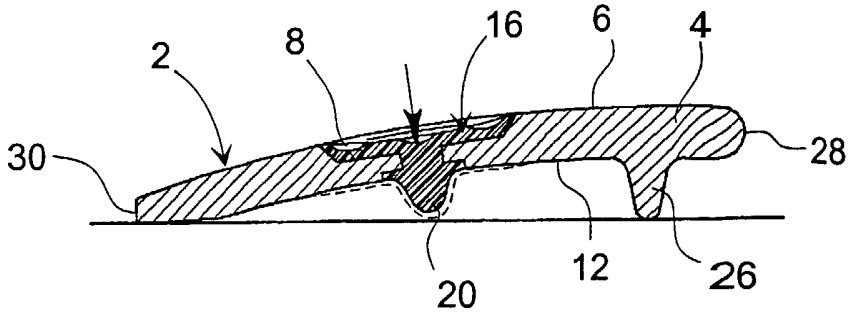
(54) Title: A RULER WITH ANTI-SLIPPING MEMBER



(57) Abstract: A ruler (2) is disclosed, especially a drawing ruler for desk use having a long ruler body (4) with a cross section or cross-sectional profile enabling one or more parts of the ruler body to be placed either at a distance from the underlying layer or in contact with the underlying layer, in that the ruler, because of material and/or the said cross-sectional profile has a certain elasticity, said parts of the ruler body comprising anti-skid means (20) being adapted to establish a frictional engagement with the underlying layer by compressive deformation of the ruler body (2), so that the ruler is fixed in relation to the underlying layer. Hereby a ruler is achieved, which by simple means and measures easily and efficiently, solely by said compressive deformation of the ruler body, can be fixed in relation to the underlying layer.

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A RULER, WITH ANTI-SLIPPING MEMBER

The present invention relates to a ruler, in particular a drawing ruler, of the type specified in the preamble of claim 1.

Extremely many types of rulers for drawing use are known, and it is likewise well-known to make rulers skid-resistant, both by means of active (movable) anti-skid means or by means of passive anti-skid means (friction strips).

Rulers are typically used as measuring, cutting, and drawing tools, in that various types of writing or cutting tools are used together with the ruler, for which reason it is important to be able to fix the ruler efficiently to the underlying layer.

It is the object of the invention to provide an improved ruler of the type mentioned in the introduction, and which by simple means and measures makes it easy efficiently to fix the ruler in relation to an underlying layer.

The ruler according to the invention is characterised in that said preferably central parts of the ruler body comprise anti-skid means being adapted to establish a frictional engagement with the underlying layer by compressive deformation of the ruler body, so that the ruler is fixed in relation to the underlying layer. Hereby a ruler is achieved, which by simple means and measures easily and efficiently, solely by said compressive deformation of the ruler body, can be fixed in relation to the underlying layer.

In a preferred embodiment of a ruler according to the invention said anti-skid measures are constituted by a relatively soft friction material, preferably provided both at the upper side and the underside of the said parts of the ruler body, and which by moulding has been integrated with the ruler, in that parts of the friction material extend through holes or recesses in said parts of the ruler body. The desired frictional

effect by the use of hard and soft friction materials respectively can be achieved by a moulding or extrusion process. The hard material may be either plastics or metal.

In an alternative preferred embodiment of a ruler according to the invention said anti-skid means are constituted by a relatively soft friction material preferably provided both at the upper side and the underside of said parts of the ruler body, and which has been fastened to the ruler by pressing projecting parts of the friction material through holes or recesses in said parts of the ruler body.

In a particularly simple embodiment of a ruler according to the invention said anti-skid means are constituted by a relatively soft friction material provided only at the underside of the said parts of the ruler body, and which material in a suitable way has been fastened to the ruler. Friction material can be connected with the ruler body by means of glue, adhesive tape, or staples. Alternatively, the friction material may be embedded in special countersunk retaining tracks in the underside of the ruler body. In a further alternative embodiment, the ruler may consist of a central longitudinal strip of relatively soft friction material being inserted between and connecting longitudinal inflexible edge parts of the ruler body, so that the ruler appears as an integral, elastic unit having a longitudinal, central friction body.

The ruler according to the invention may furthermore be shaped in such a way that said anti-skid means are constituted by a strip having a predominantly triangular cross section and, towards the bottom, a rounded tapered end, which strip at the underside of the said parts of the ruler body predominantly extends along the entire ruler.

A further preferred embodiment of a ruler according to the invention is suitably shaped in such a way that the ruler body extending from a longitudinal side edge, which edge in the situation of use constitutes the active drawing, cutting, and/or measuring edge of the ruler, and towards a second longitudinal side edge has a slightly sloping course, i.e. increasing distance between the underside of the ruler body and the underlying layer, that the ruler close to the said second longitudinal side edge towards the bottom has longitudinal support strip constituting an integral part of the ruler body,

and that said anti-skid means are provided approximately in the middle between the said longitudinal side edges.

Quite generally, the ruler according to the invention is shaped in such a way that the elasticity of the ruler body, in addition to choice of material, is determined by material thickness and/or of the number and sizes of holes or recesses in the central part of the ruler body. Furthermore, the elasticity of the ruler body may preferably be determined by local thickness reduction of the material opposite the said holes or recesses in the central part of the ruler body.

In an especially simple way the desired effect of the ruler according to the invention can be achieved by said anti-skid means being constituted by a number of holes or recesses intended for receiving a finger tip whose pulp by said compressive deformation of the ruler exerts the said frictional engagement with the underlying layer.

Or the ruler according to the invention is shaped so that the said anti-skid means are constituted by a rough and/or fluted surface provided on the underside of preferably central parts of the ruler body. Thus the ruler has no movable parts and consists of one part.

The invention furthermore relates to a ruler, especially for board use, having a long body with a cross section or cross-sectional profile and a longitudinal section or a longitudinal profile enabling one or more preferably central parts of the ruler body to be placed either at a distance from the underlying layer or in contact with the underlying layer, in that the ruler, because of material and/or the said cross-sectional and longitudinal profiles has a certain elasticity, which ruler is characterised in that the said parts of the ruler body comprise anti-skid means being adapted to establish a frictional engagement with the underlying layer by compressive deformation of the ruler, so that the ruler is fixed in relation to the underlying layer.

Hereby a so-called metric ruler for board use is achieved, which ruler is manufactured according to the same principles as those for the desk ruler; but which furthermore has a longitudinal section or longitudinal profile enabling a central part in the longitudinal direction of the ruler body to be placed at a distance from the underlying layer (the board) or in contact with the board, in that the frictional engagement with the board is established by compressive deformation of the ruler body.

The invention is explained in more detail below in connection with the drawing in which

Fig. 1 shows a perspective view of a preferred embodiment of a ruler for desk use according to the invention,

Fig. 2 shows a perspective view of the ruler shown in Fig. 1, seen from below,

Fig. 3 shows a sectional view through the ruler according to the invention shown in Fig. 1,

Fig. 4 shows a perspective view of an end part of the ruler according to the invention shown in Fig. 1,

Fig. 5 shows a perspective view of an end part of the ruler according to the invention shown in Fig. 1, with no friction body,

Fig. 6 shows a perspective view of an end part and corresponding friction body of the ruler according to the invention shown in Fig. 1,

Fig. 7 shows a perspective view of a ruler seen from below, and corresponding friction body, cf. Fig. 1

Fig. 8 shows a perspective view of an end part of another embodiment of a ruler according to the invention,

Fig. 9 shows a perspective view of an end part of a further embodiment of a ruler according to the invention,

Fig. 10 shows a perspective view of an end part of yet another embodiment of a ruler according to the invention,

Fig. 11 shows a perspective view of an end part of yet an alternative embodiment of a ruler for desk use according to the invention,

Fig. 12 shows a perspective view of an end part of an embodiment of a ruler for board use according to the invention,

Fig. 13 shows a perspective view of an alternative embodiment of a ruler for board use according to the invention,

Fig. 14a shows a plane view of yet an alternative embodiment of a ruler according to the invention, seen from an end,

Fig. 15a shows a cross-sectional view through yet another embodiment of a ruler according to the invention,

Fig. 15b shows a perspective view of the ruler, cf. Fig. 15a, seen from a longitudinal side thereof,

Fig. 15c shows a perspective view of the ruler, cf. Fig. 15b, seen from the opposite longitudinal side,

Fig. 16a shows a sectional view trough yet another embodiment of a ruler according to the invention,

Fig. 16b shows a perspective view of the ruler, cf. Fig. 16a, seen from a longitudinal side thereof,

Fig. 16c shows a perspective view of the ruler, cf. Fig. 16b, seen from the opposite longitudinal side,

Fig. 17a shows a view of yet another embodiment of a ruler according to the invention, seen from an end,

Fig. 17b shows a perspective view of the ruler, cf. Fig. 17a, seen from a longitudinal side thereof, and

Fig. 17c shows a perspective view of the ruler, cf. Fig. 17b, seen from the opposite longitudinal side,

The ruler 2 shown in Figs. 1-7 consists of a ruler body 4 having a slightly convex curved upper side 6 in which a longitudinal central cavity 8 is formed with a number of holes 10 (Figs. 5, 6, and 7). On its slightly concavely curved underside 12, the ruler body 4 has an oblong central cavity 14, into which the holes 10 debouch.

The cavities 8 and 14 on the upper side 6 and the underside 12 respectively of the ruler body 4 are filled in by a friction body 16 (shown separately in Figs. 6 and 7) of relatively soft material. The friction body 16 is preferably moulded onto the ruler body 4 in such a way that the friction body 16 on the upper side of the ruler 2 forms a central, longitudinal activation surface 18, and so that the friction body 16 on the underside of the ruler 2 forms a central, longitudinal friction strip 20, which by compressive deformation of the ruler body 4, as indicated by an arrow 22 in Fig. 3, is pressed against the underlying layer 24. The ruler body 4 has a certain elasticity so that the friction strip 20, which by means of a longitudinal support strip 26 at a back side edge 28 has been lifted off the underlying layer 24, by a relatively light pressure on the activation surface 18, can be pressed against the underlying layer for secure

fixing of the ruler 2 in relation to the underlying layer 24, during use of an active drawing, cutting, and/or measuring edge 30 of the ruler 2.

Figs. 8-10 show rulers according to the invention with alternative embodiments of holes, cavities, and recesses. Fig. 8 thus shows a ruler 32 having a large number of holes 34 at the bottom of the central groove. Fig. 9 shows a ruler 36 having more edged holes or recesses 38 so that only very little material is left opposite the friction body 16, i.e. so that the elasticity of the ruler 36 becomes larger. Fig. 10 shows a ruler 40 with oval or oblong holes or recesses 42 at the bottom of the central longitudinal groove of the upper side of the ruler.

Fig. 11 shows an alternative embodiment of a ruler 44 where the friction body has been replaced by holes or recesses 46 which, by placing of fingers therein, act so that pulps of fingers act as friction bodies by engagement with the underlying layer through the said holes or recesses. The ruler 44 has a slightly curved convex upper side 48 and a slightly curved concave underside 50.

Fig. 12 shows an end part of an embodiment of a one-metre ruler for board use where the ruler body 54 also in its longitudinal direction has such a longitudinal section or longitudinal profile that a central part of the ruler body 54 both can be placed at a distance from the underlying layer (the board) and can be pressed against the underlying layer.

Fig. 13 shows another embodiment of a ruler 56 for board use, where it maybe more clearly appears that the ruler 56 also in its longitudinal direction has a curved course allowing a central body part of the ruler 56 to be placed both at a distance from and in contact with the underlying layer (the board).

Figs. 14a and 14b show another embodiment of a ruler 58 for desk or table use. The ruler 58 is two-sided, i.e. it can be provided with mutually different measuring systems on each of it sides, in that a body part 60 of the ruler 58 has a nail-like cross section with a narrowing 62 under a wider transverse head part 64, so that the body

part 60, which at each of the two sides is provided with a longitudinal anti-skid body 66 so that the bodies by compressive action of the ruler body 60 from an optional side can be pressed against the board or desk surface. In other words, by means of the longitudinal narrowing 62, the wanted elasticity of the ruler body 60 is achieved, said body preferably being symmetrical about a longitudinal axis.

Figs. 15a, 15b, and 15c show an alternative embodiment of a ruler 68 according to the invention for desk or table use where the elasticity or springy effect of the ruler body has been achieved by means of a longitudinal edgewise bend 70 between two longitudinal wings 72, 74 of the ruler 68, i.e. the ruler wing 72 is adapted to abut against the support surface, while the ruler wing 74 has an acute angle in relation to the ruler wing 72 and has a certain springy effect in relation to the ruler wing 74. On its inner side 76, this is provided with a number of projecting anti-skid bodies 78 intended for being pressed against the support surface through holes 80 which are shaped in the ruler wing 72 opposite the anti-skid bodies 78. Preferably, the upper side of the upper side of the ruler wing 74, as shown in Fig. 15c, is provided with measurement marks and measurement indicators 82 along the longitudinal closed edge 70, but there is however nothing to prevent the opposite longitudinal side edges at the opposite side of the ruler body from also being provided with measurement marks and/or measurement indicators. The ruler 68 can be manufactured of relatively thin sheet material, e.g. plastics, metal, or laminated paper suitable for imprinting, and which is relatively inexpensive.

Figs. 16a, 16b, and 16c show a corresponding alternative embodiment of a ruler 84 according to the invention for desk or board use. The ruler 84 has two mutually edgewise bent ruler wings 86 and 88 which both, opposite each other, are shaped with holes 90 so that the upper ruler wing 88 can be pressed down for abutment against the ruler wing 86, and so that the finger tips of the user can be introduced through the holes 90, in the way described above, where pulps of the finger tips constitute anti-skid bodies, which through the holes 90 are pressed against the support surface.

In another alternative embodiment of a ruler 92, which is shown in Figs. 17a, 17b, and 17c, a lower ruler wing 94 is shaped considerably narrower than an upper ruler wing 96. Along an outer, longitudinal edge area along an inner side 98, the latter is provided with a longitudinal friction body 100 which by downwards pressing of the ruler wing 96 is adapted to be pressed against the support surface. Alternatively, the friction body 100, cf. previously described embodiments, could instead consist of anti-skid bodies that are more pinhead-shaped, or of finger holes so that pulps of finger tips can constitute the said anti-skid bodies.

Finally it should be pointed out that the primary aspect of the invention, viz. to specify a ruler, where a frictional engagement between the ruler and a support surface can be achieved by compressive deformation of a part of the ruler, can be fulfilled in any other way within the scope of the invention. Maybe a ruler body of non-elastic material opposite a writing edge could be provided with a longitudinal friction lip manufactured of an elastic material, and which in relation to the ruler body extends in a concave curve, so that the friction lip in a state where no pressure is exerted upon it is lifted off the support surface, and so that the friction lip by compressive action fully or partly can be pressed against the support surface.

CLAIMS

1. A ruler, in particular a drawing ruler for desk use, having a long body with a cross section or cross-sectional profile enabling one or more parts of the ruler body to be placed either at a distance from the underlying layer or in contact with the underlying layer, in that the ruler, because of material and/or said cross-sectional profile, possesses a certain elasticity, c h a r a c t e r i s e d in that the said parts of the ruler body comprise anti-skid means, being adapted to establish frictional engagement with the underlying layer by compressive deformation of the ruler body, so that the ruler is fixed in relation to the underlying layer.

2. A ruler according to claim 1, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a relatively soft friction material, preferably provided both at the upper side and underside of the said central parts of the ruler body, and which by moulding has been integrated with the ruler.

3. A ruler according to claim 2, c h a r a c t e r i s e d in that parts of the friction material extend through holes or recesses in the said parts of the ruler body.

4. A ruler according to claim 1, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a relatively soft friction material provided both at the upper side and the underside of the said parts of the ruler body, and which material has been fastened to the ruler by pressing projecting parts of the friction material through holes or recesses in the said parts of the ruler body.

5. A ruler according to claim 1, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a relatively soft friction material provided only at the underside of the said parts of the ruler body, and which material in a suitable way has been fastened to the ruler.

6. A ruler according to claims 1, 2, 3, and 5, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a strip having a predominantly triangular cross

section and towards the bottom a rounded tapered end, which strip at the underside of the said parts of the ruler body predominantly extends along the entire ruler.

7. A ruler according to claims 1 and 6, c h a r a c t e r i s e d in that the ruler body extending from a longitudinal side edge, which in the situation of use constitutes the active drawing, cutting and/or measuring edge of the ruler, and towards a second longitudinal side edge has a slightly sloping course, i.e. increasing distance between the underside of the ruler body and the underlying layer, that the ruler close to the said second longitudinal side edge towards the bottom has longitudinal support strip constituting an integral part of the ruler body, and that said anti-skid means are provided approximately in the middle between the said longitudinal side edges.

8. A ruler according to claim 1, c h a r a c t e r i s e d in that the elasticity of the ruler body, in addition to choice of material, is determined by material thickness and/or of the number and sizes of holes or recesses in the central part of the ruler body.

9. A ruler according to claim 8, c h a r a c t e r i s e d in that the elasticity of the ruler body additionally preferably is determined by local thickness reduction of the material opposite the said holes or recesses in the central part of the ruler body.

10. A ruler according to claim 1, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a number of holes or recesses intended for receiving a finger tip whose pulp by the said compressive deformation of the ruler exerts the said frictional engagement with the underlying layer.

11. A ruler according to claim 1, c h a r a c t e r i s e d in that the said anti-skid means are constituted by a rough and/or fluted surface provided on the underside of preferably central parts of the ruler body.

12. A ruler, especially for board use, having a long body with a cross section or cross-sectional profile and a longitudinal section or a longitudinal profile enabling one or more preferably central parts of the ruler body to be placed either at a distance from

the underlying layer or in contact with the underlying layer, in that the ruler because of material and/or the said cross-sectional and longitudinal profiles has a certain elasticity, c h a r a c t e r i s e d in that the said parts of the ruler body comprise anti-skid means being adapted to establish a frictional engagement with the underlying layer by compressive deformation of the ruler, so that the ruler is fixed in relation to the underlying layer.

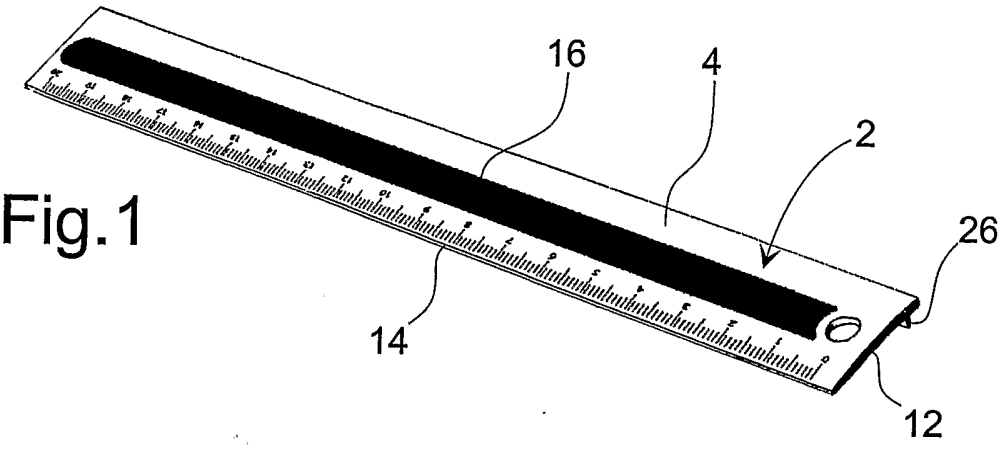


Fig.1

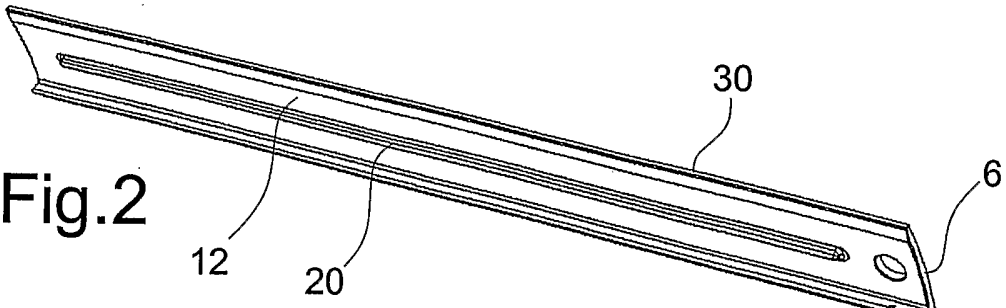


Fig.2

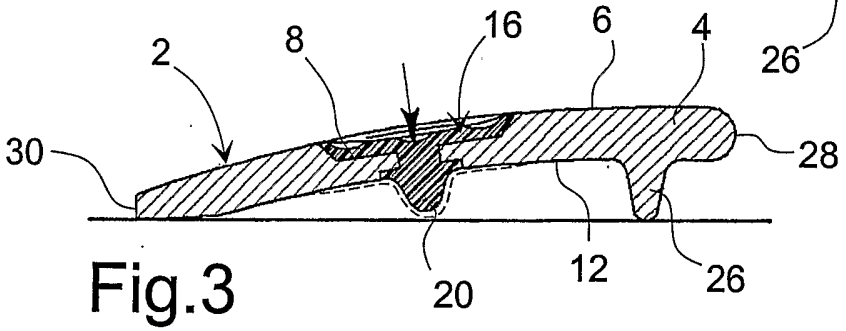


Fig.3

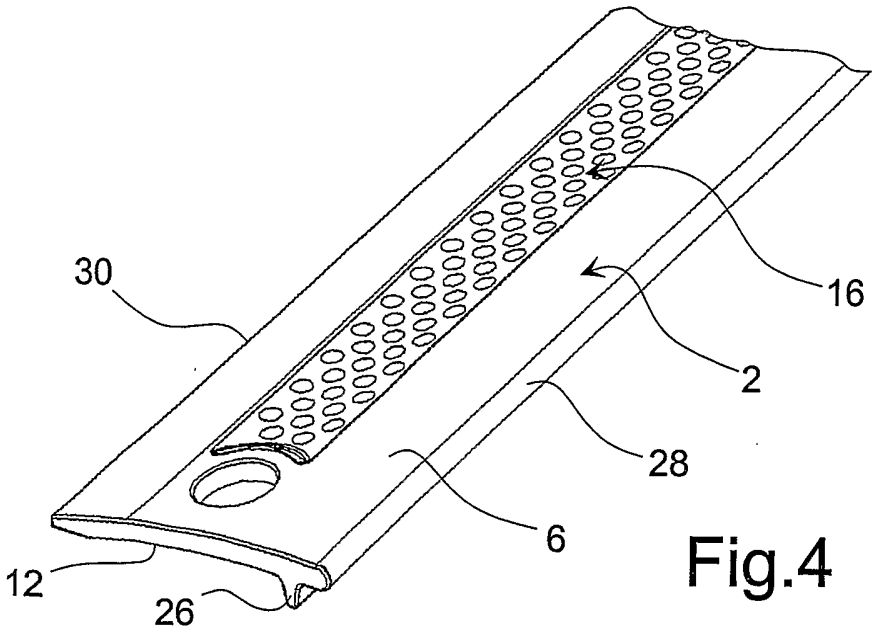
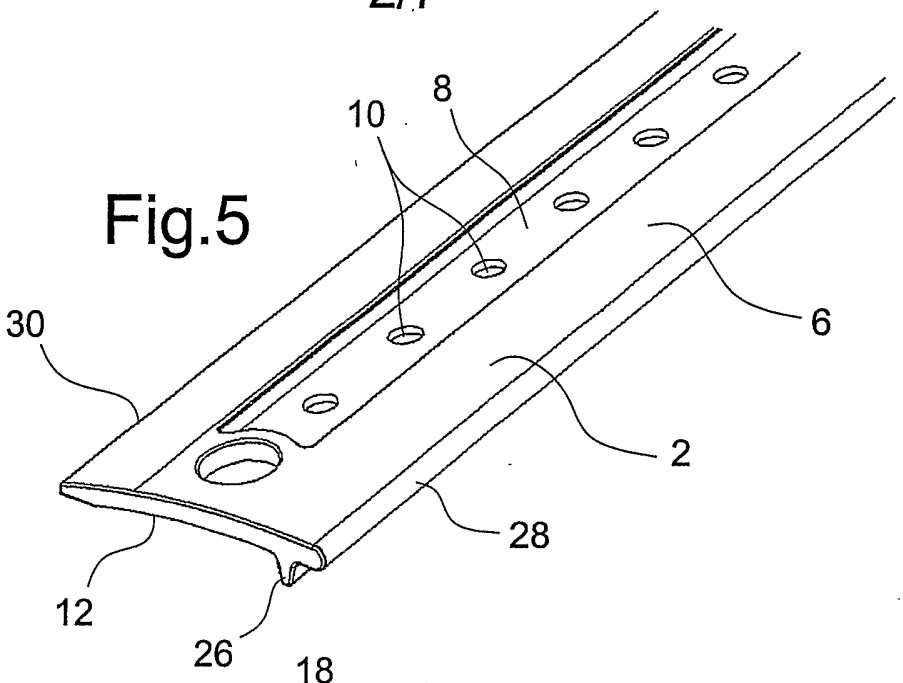


Fig.4

Fig.5



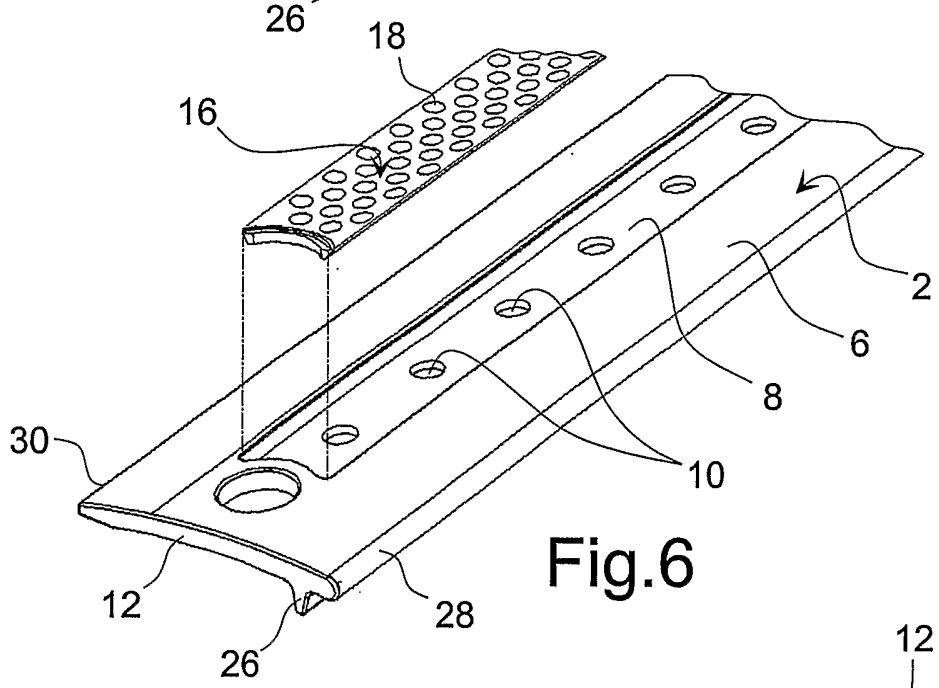


Fig.6

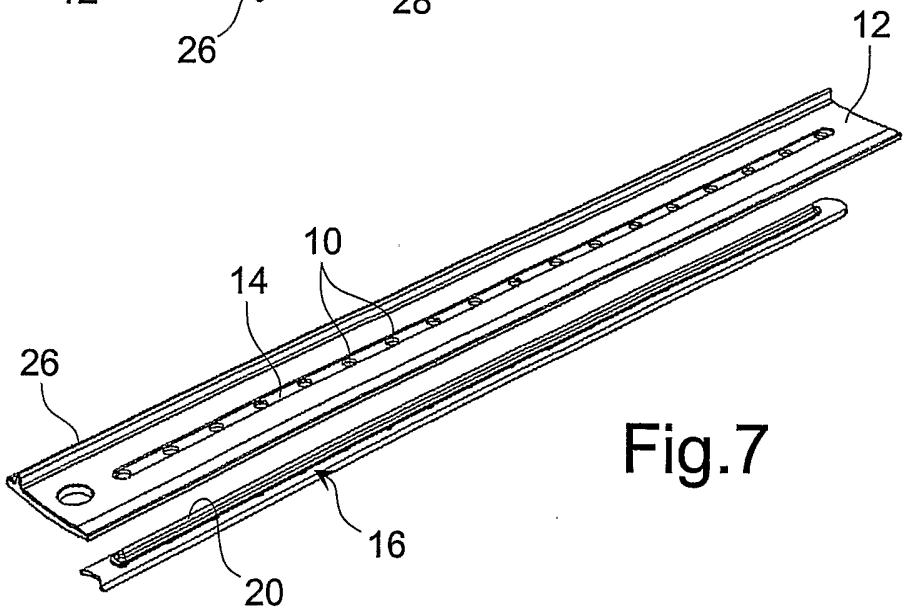


Fig.7

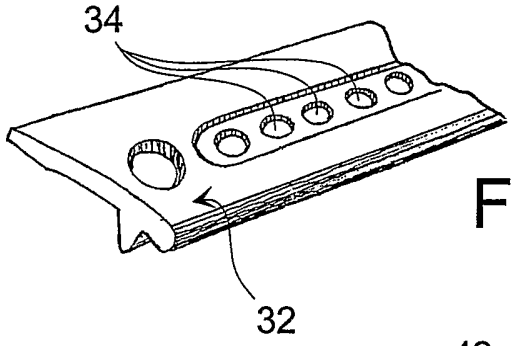


Fig.8

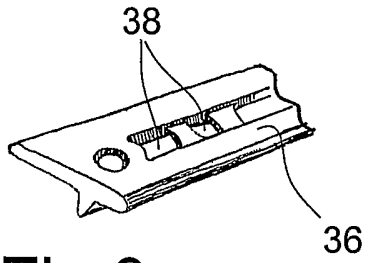


Fig.9

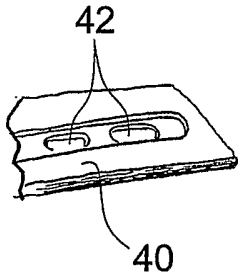


Fig.10

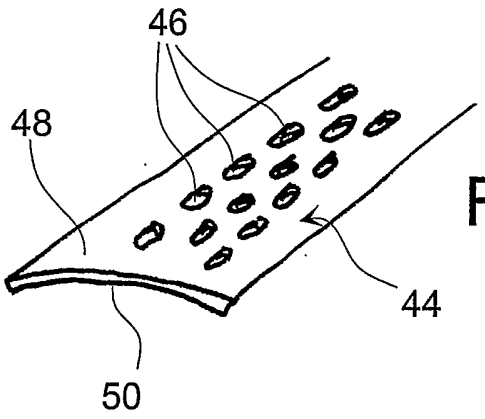


Fig.11

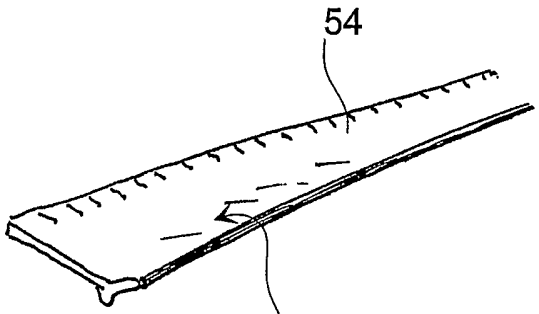


Fig.12

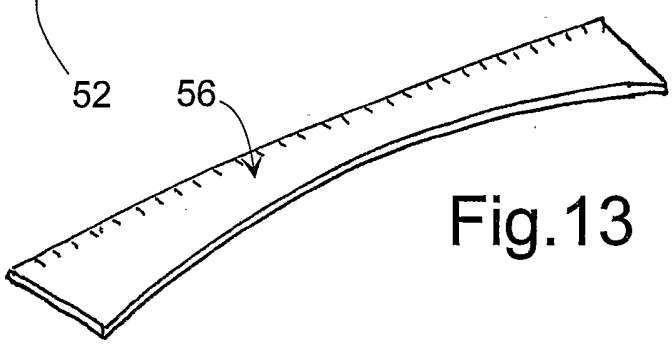


Fig.13

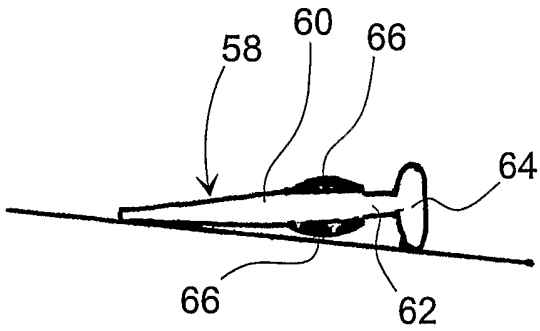


Fig.14a

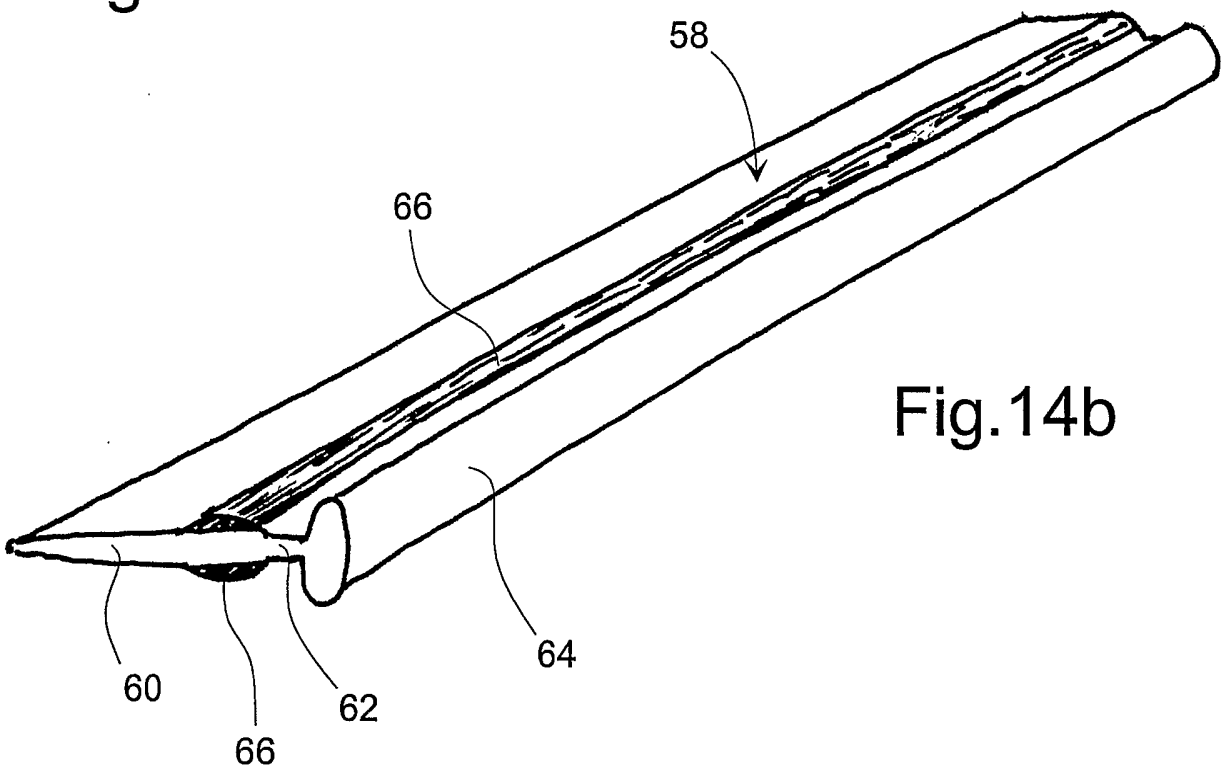


Fig.14b

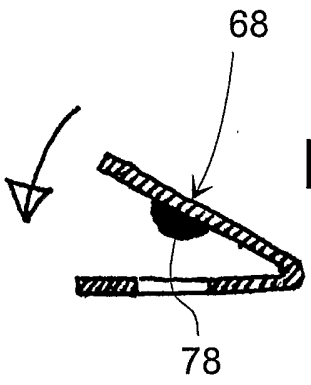


Fig.15a

Fig.15b

Fig.15c

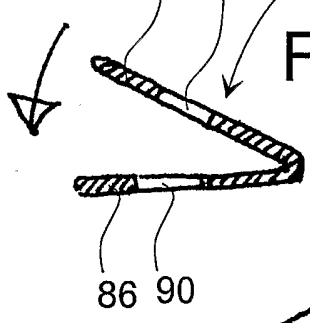


Fig.16a

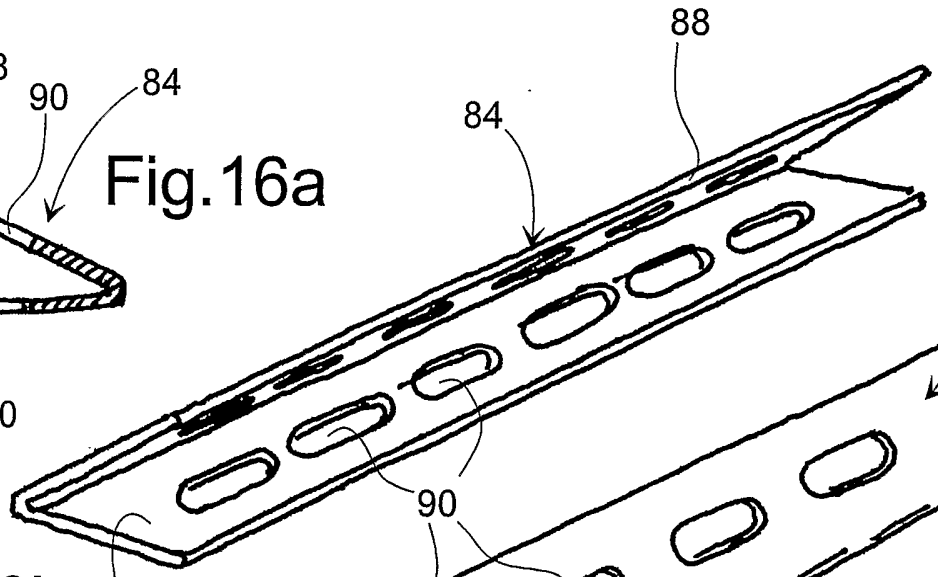


Fig.16b

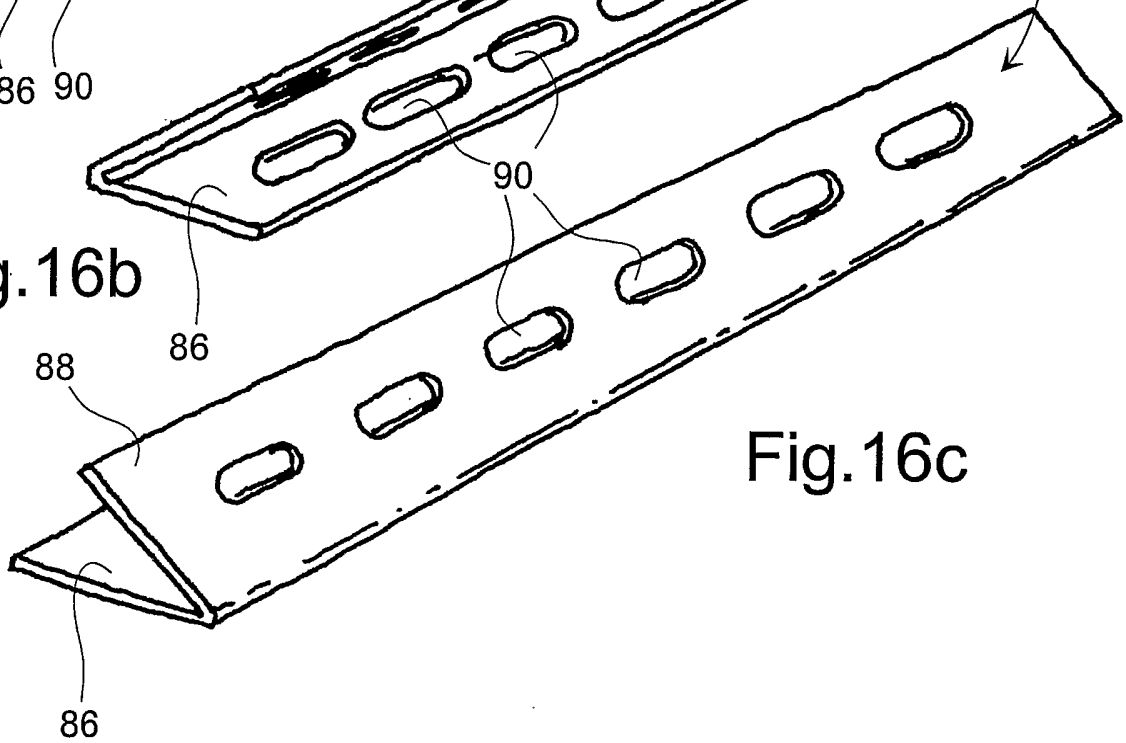


Fig.16c

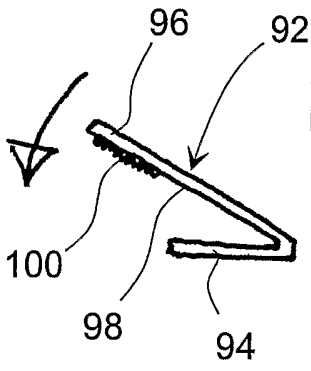


Fig.17a

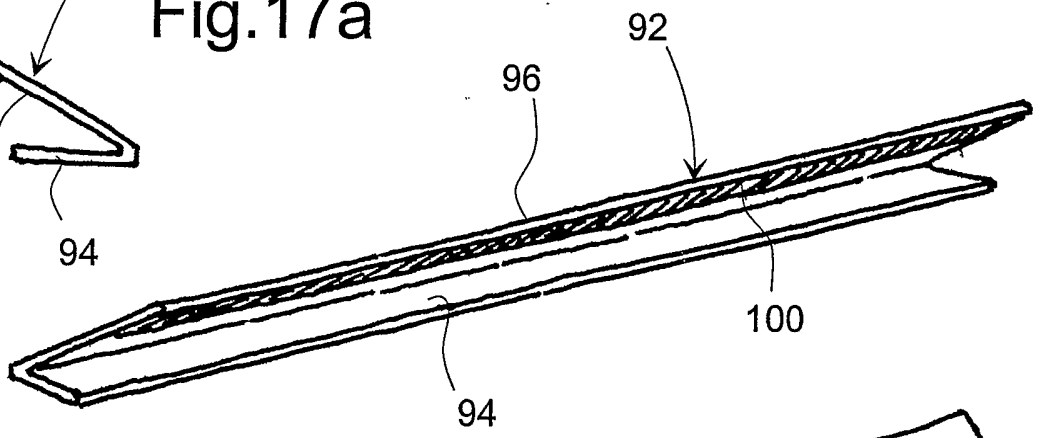


Fig.17b

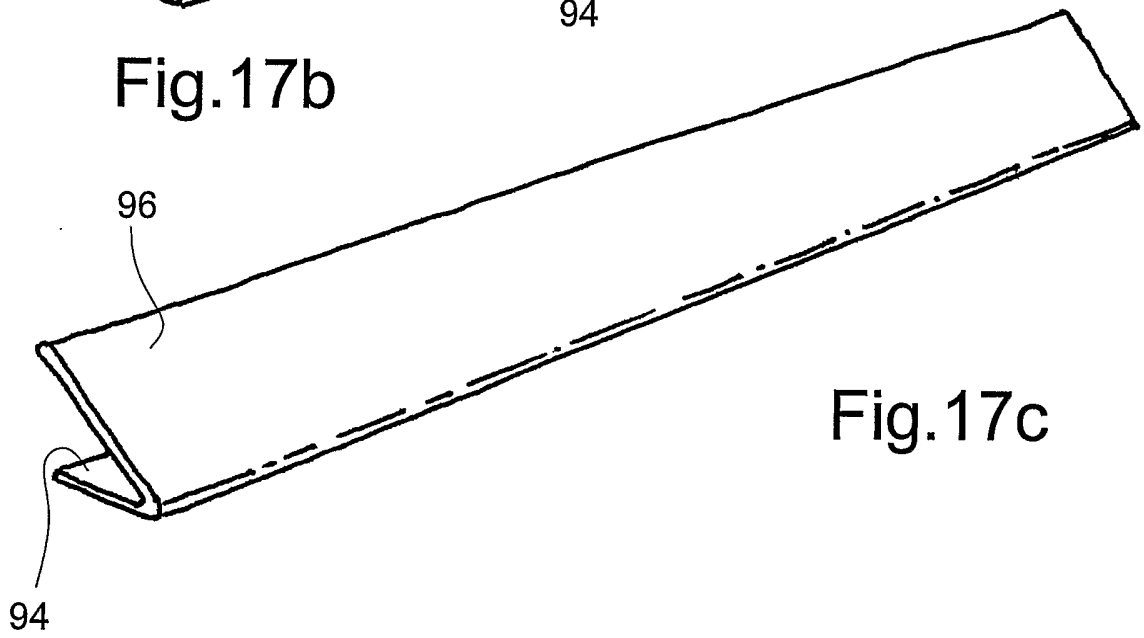


Fig.17c

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 03/00068

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B43L 7/00, B43L 12/00
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)

IPC7: B43L

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

SE,DK,FI,NO classes as above

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

EPO-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	BE 518765 A (F. DUELUND NIELSEN), 15 April 1953 (15.04.53), page 2, figures 1-7, claim 1	1,5-9,12
Y		10
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X	US 864396 A (W.S. WESTON), 27 August 1907 (27.08.07), figures 1-6, claims	1-5,8,9,12
Y		10
	--	
Y	DK 9600160 U3 (J.B. JOHANSEN ET AL), 9 August 1996 (09.08.96), figures 4,5	10
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 April 2003	28 -04- 2003
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Heléne Eliasson / MRo Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 03/00068

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X	DE 3106176 A1 (J.RUMOLD KG MASSTAB- UND ZEICHENGERÄTEFABRIK), 9 Sept 1982 (09.09.82), page 17, paragraph 2, figure 1	1,11,12
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Information on patent family members

29/03/03

International application No.
PCT/DK 03/00068

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US 566195 A	1896	NONE	
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JP 57-153000 A	21/09/82	NONE	