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(72) Inventors:
• **Beasley, Simon**
Penpedairheol Hengoed CF82 8LA (GB)
• **Roberts, Huw**
Ewenny Nr. Bridgend CF35 5BH (GB)

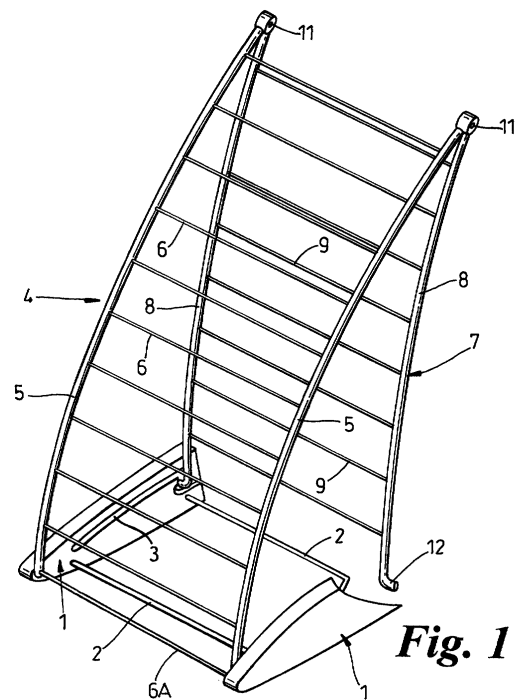
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(74) Representative: **Lainé, Simon James et al**
Wynne-Jones, Lainé & James
Morgan Arcade Chambers
33, St.Mary Street
Cardiff CF1 2AB (GB)

(71) Applicant: **Hills Industries Limited**
Caerphilly, Mid Glamorgan CF83 3HU (GB)

(54) **Improvements relating to folding rack driers**

(57) A folding rack drier has two frames (4, 7) mutually hinged. At the other ends from the hinge axis the first frame (4) is pivoted to a base (1, 2) while the second frame (7) has projections (12) engageable in tracks (3) in base members (1) and locatable by circumventable abutments (18) at the ends of the tracks (3) remote from the pivot axis (10). With the base (1, 2) on the floor, the frames (4, 7) can be arranged as an inverted V. With the base (1, 2) attached to a wall (13), the frames (4, 7) can have the same configuration, but with the V sideways, or the second frame (7) can be hinged up between the pivot frame (4) and the base (1, 2), the projections (12) sliding up the tracks (3) as the first frame (4) is swung down, or the second frame (7) can be released from the base (1, 2) by the projections (12) being manipulated around the abutments (18) so that the second frame (7) inclines down from the suspended first frame (4) to rest on the floor.



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Description

[0001] This invention relates to folding rack driers.

[0002] These come in many different forms, but there are two basic categories, namely floor standing and wall mounted.

[0003] The aim of this invention is to provide one that can be either, according to choice, and moreover one that can offer more than just one configuration.

[0004] According to the present invention there is provided a folding rack drier comprising a base adapted to be both floor standing and wall mounted, a first frame pivoted at one end to the base and a second frame hinged at one end to the other end of the first frame and with its other end captively engageable with the base at a distance from the pivot axis of the first frame, the arrangement permitting different modes of use including:

(i) floor standing, with the base on the floor, the other end of the second frame captively engaged with the base, and the frames upstanding in a generally inverted V configuration, and

(ii) wall mounted, with the base attached to a wall, pivot axis horizontal and with

(a) the other end of the second frame captively engaged with the base below said pivot axis, and the frames projecting out from the wall in a generally sideways V configuration,

(b) the second frame folded up between the first frame, hanging down from the pivot axis, and the base, or

(c) the first frame hanging down from the pivot axis and second frame, its other end disengaged from captivity to the base, hinged down from the first frame for its other end to rest on the floor.

[0005] The sides of each frame preferably comprise two parallel spars, these being spanned by spaced parallel bars on which the articles to dry will be hung.

[0006] These spars, and therefore the frames as a whole, may be curved so that in mode (ii) (b) they arc out beyond the base with their junction bearing against the wall below the base, and so that in mode (ii) (c) also the junction bears against the wall but with just the first frame arcing out beyond the base and with the second frame curving in a reverse sweep away from the wall and down to the floor.

[0007] The base conveniently includes two parallel elongate members, the two corners at said one end of the first frame being pivoted near one end of each member while the two corners at the other end of the second frame are engageable in tracks extending lengthwise of the base members and configured to guide those corners in transition between modes (ii) (a) and (ii) (b), and to locate those corners in modes (i) and (ii) (a).

[0008] The tracks can have circumventable abut-

ments which provide the means for locating the corners at the other end of the second frame.

[0009] Preferably each track is in the side of a respective one of the base members, facing the other track which is of mirror image form, the corners at the other end of the second frame having lateral projections to engage in the tracks. Each track may be generally L-shaped, the long arm extending from adjacent the pivot axis to near the other end of the base member, the short arm extending downwards in mode (i) or towards the wall in each of modes (ii) from the corner of the L, and the abutment being at the free end of the short arm. Each short arm may have a branch of the track leading off upwardly in modes (ii) (a) and (b), and then turning towards the wall and downwardly to circumvent the abutment and to provide an escape for the associated lateral projection from the base member, thereby allowing attainment of mode (ii) (c).

[0010] The base preferably includes at least two rods spanning said elongate members, to make the base a third frame. Each elongate member may comprise two moulded parts secured together, each rod end passing through one moulded part and being bent out of alignment with the main portion of the rod to seat in a recess of the other moulded part and to be trapped therein when the parts are mutually secured.

[0011] For a better understanding of the invention one embodiment will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view, partly broken away, of a multi-position drier in floor standing mode,

Figure 2 is a side elevation of a base member of the drier, with a cover plate removed,

Figure 3 is a side view of the drier in floor standing mode,

Figure 4 is a side view of the drier in extended wall hanging mode,

Figure 5 is a side view and a perspective view of the drier in folded wall hanging mode, and

Figure 6 is a side view and a perspective view of the drier in wall and floor mode.

[0012] The drier has twin base members 1 each of generally wedge like form. They are parallel and spaced apart by two rods 2 which complete a frame-like base, and their inner faces present curved and stepped channels 3 to guide the folding and erection of frames carried by the base. These base members 1 will be described in more detail below.

[0013] A first frame 4 comprises curved parallel spars 5 spanned at regular intervals by parallel bars 6. A second, slightly smaller frame 7 is similar, having curved spars 8 and transverse bars 9.

[0014] The frame 4 is pivoted at its corners at one end to the narrow ends of the base members 1. The end bar 6A may be longer than the others and extend beyond the spars 5 to engage in sockets 10 provided by the bas-

es. It thus forms a pivot. The other ends of the spars 5 have hinged connections 11 to first ends of the spars 8 of the frame 7. Instead of the hinges 11 illustrated, one of the adjacent end bars 6 or 9 could be lengthened beyond their spars 5 or 8 to engage in sockets provided by the spars 8 or 5 of the other frame. Generally it would be the frame 4 that is slightly wider than the frame 7 so that an extended bar 9 of that frame 7 would form a hinge pin. The other, second ends of the spars 8 have out-turned fingers 12 that will engage in the channels 3. The frames are arranged so that, when they are hinged together and pivoted against the base, they are convex away from the base.

[0015] Figures 1 and 3 show the drier in floor standing mode, with the base flat on the floor, the frame 4 raised to arc back over and slightly beyond the base, and the frame 7 in a supporting role, hinged so that its fingers 12 engage in the channels 3 near their mouths at the larger ends of the base members 1. Figure 3 also shows how the drier can be set against a wall 13 to reach over a radiator 14 on that wall and gain full advantage of its heat.

[0016] The drier can be wall mounted by engaging keyhole slots (not shown) in the flat underside of each base member 1 over suitably placed screw-heads projecting from the wall 13, and there it may be adjusted into various different configurations.

[0017] In Figure 4 it is still in the Figure 1 arrangement, but turned through 90° to project out from the wall 13, frame 4 uppermost. Preferably, the bars 6 will then not directly overlie the bars 9 but alternate with them in the horizontal direction away from the wall, so that articles can hang freely from both sets of bars.

[0018] When out of use, the frames 4 and 5 can be manipulated to free the fingers 12 from being trapped near the mouths of the channels 3. Then the frame 7 is hinged up towards the frame 4 and both frames are released or lowered. As the frame 4 swings down towards the wall, the fingers 12 slide up the channels 3 of the base members 1 until the hinges 11 meet the wall 13 and position of Figure 5 is reached.

[0019] As the frames still stand away from the wall, although to a much lesser extent, some of the bars 6 and 9 can be used for drying a few articles.

[0020] A further mode of use is shown in Figure 6 where, instead of folding the frame 7 towards the frame 4, the fingers 12 are released from the channels 3 and then the frame 7 is hinged in the opposite direction through about 180° while the frame 4 is lowered. This again brings the hinges 11 against the wall 13, but the frame 7 sweeps down and away from the wall with its fingers 12 resting on the floor.

[0021] Referring now in more detail to Figure 2, it will be understood that the other base member is a mirror image of the one shown, so only one will be described. It is of moulded plastics construction with a smooth outer face and, as seen in the figure, with upstanding walls and ribs which will be capped by the cover plate. That

will provide the inner face with a slot matching the channel 3.

[0022] In the Figure 5 configuration, the associated finger 12 is at the upper (left hand) end 15 of the channel 3, adjacent the narrow end of the base member. To change to the Figure 4 mode, the frames are lifted, the frame 4 pivoting about the axis of the sockets 10. While the frame 7 hinges with respect to the frame 4, its fingers 12 move down the slightly curved channels 3 until they hit the substantially right angled bends 16. If the frames are then released, as the frame 4 starts to swing down, the fingers 12 are pushed along the short horizontal legs 17 of the channels 3 until they meet hooked tongues 18. They are trapped thereby and the Figure 4 configuration is attained.

[0023] To change to the Figure 6 mode, the frames are pulled out and slightly up to free the fingers 12 from the tongues 18, and the frame 7 is pushed up for the fingers 12 to enter the curved sections 19 of the channels 3 around the tongues 18. The frame 7 is manipulated to take the fingers 12 past the tongues, into straight sections 20 forming the mouths of the channels, and then clear of the base altogether. The frames can then be lowered into the Figure 6 configuration.

[0024] In the Figure 3 arrangement the tongues 18 will be taking the weight of the frame 7 rather than resisting the horizontal thrust of that frame as in Figure 4.

[0025] Changing from Figure 6 to Figure 4 and then on to Figure 5 is simply the reverse of the actions described.

[0026] Figure 2 also shows two elongated reinforced recesses 21 in the base member 1. The rods 2 pass through the cover plates referred to above and their ends, each bent at right angles to the main length of the respective rod, seat in these recesses. When the cover plates are attached, for example by screws into thickened points 22 of the ribbing, the rods 2 are captive and the two base members 1 securely joined.

Claims

1. A folding rack drier comprising a base adapted to be both floor standing and wall mounted, a first frame pivoted at one end to the base and a second frame hinged at one end to the other end of the first frame and with its other end captively engageable with the base at a distance from the pivot axis of the first frame, the arrangement permitting different modes of use including:

- (i) floor standing, with the base on the floor, the other end of the second frame captively engaged with the base, and the frames upstanding in a generally inverted V configuration, and
- (ii) wall mounted, with the base attached to a wall, pivot axis horizontal, and with

- (a) the other end of the second frame cap-
tively engaged with the base below said
pivot axis, and the frames projecting out
from the wall in a generally sideways V
configuration, 5
- (b) the second frame folded up between
the first frame, hanging down from the pivot
axis, and the base, or
- (c) the first frame hanging down from the
pivot axis and the second frame, its other
end disengaged from captivity to the base,
hinged down from the first frame for its oth- 10
er end to rest on the floor.
2. A folding rack drier as claimed in Claim 1, wherein 15
the sides of each frame comprise two parallel spars,
these being spanned by spaced parallel bars on
which the articles to dry will be hung.
3. A folding rack drier as claimed in Claim 2, wherein 20
the spars, and therefore the frames as a whole, are
curved so that in mode (ii) (b) they arc out beyond
the base with their junction bearing against the wall
below the base, and so that in mode (ii) (c) also the
junction bears against the wall but with just the first 25
frame arcing out beyond the base and with the sec-
ond frame curving in a reverse sweep away from
the wall and down to the floor.
4. A folding rack drier as claimed in Claim 1, 2 or 3, 30
wherein the base includes two parallel elongate
members, the two corners at said one end of the
first frame being pivoted near one end of each mem-
ber while the two corners at the other end of the
second frame are engageable in tracks extending 35
lengthwise of the base members and configured to
guide those corners in transition between modes (ii)
(a) and (ii) (b), and to locate those corners in modes
(i) and (ii) (a). 40
5. A folding rack drier as claimed in Claim 4, wherein 45
the tracks have circumventable abutments which
provide the means for locating the corners at the
other end of the second frame.
6. A folding rack drier as claimed in Claim 5, wherein 50
each track is in the side of a respective one of the
base members, facing the other track which is of
mirror image form, the corners at the other end of
the second frame having lateral projections to en-
gage in the tracks.
7. A folding rack drier as claimed in Claim 6, wherein 55
each track is generally L-shaped, the long arm ex-
tending from adjacent the pivot axis to near the oth-
er end of the base member, the short arm extending
downwards in mode (i), or towards the wall in each
of modes (ii) from the corner of the L, and the abut-
ment being at the free end of the short arm.
8. A folding rack drier as claimed in Claim 7, wherein 5
each short arm has a branch of the track leading off
upwardly in modes (ii) (a) and (b), and then turning
towards the wall and downwardly to circumvent the
abutment and to provide an escape for the associ-
ated lateral projection from the base member, there-
by allowing attainment of mode (ii) (c).
9. A folding rack drier as claimed in any one of Claims 4 to 8, wherein the base includes at least two rods 10
spanning said elongate members, to make the base
a third frame.
10. A folding rack drier as claimed in Claim 9, wherein 15
each elongate member comprises two moulded
parts secured together, each rod end passing
through one moulded part and being bent out of
alignment with the main portion of the rod to seat in
a recess of the other moulded part and to be trapped
therein when the parts are mutually secured. 20

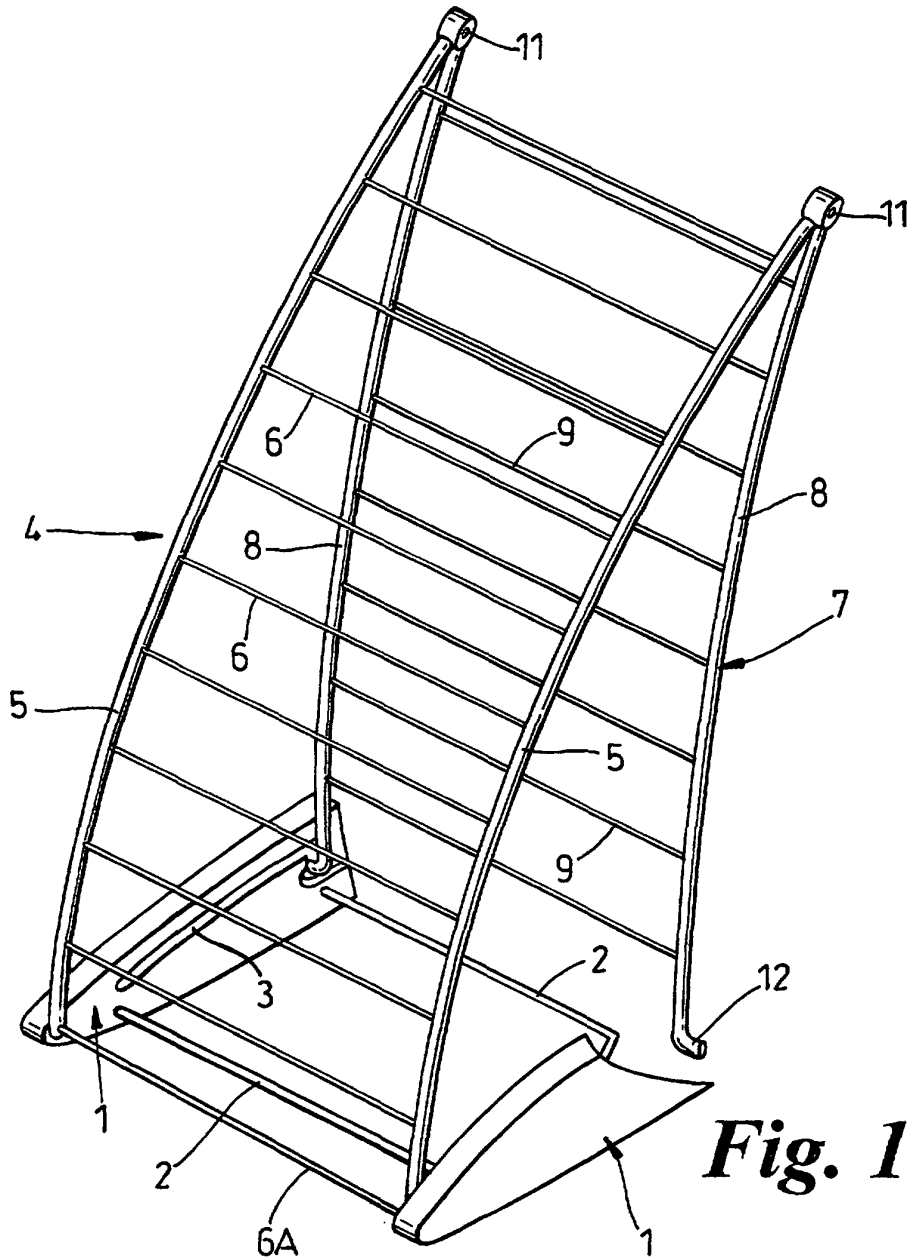


Fig. 1

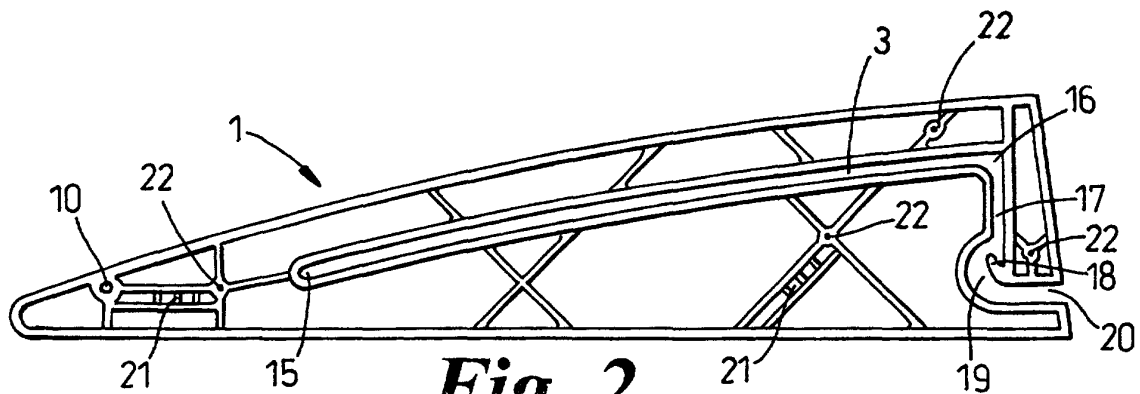


Fig. 2

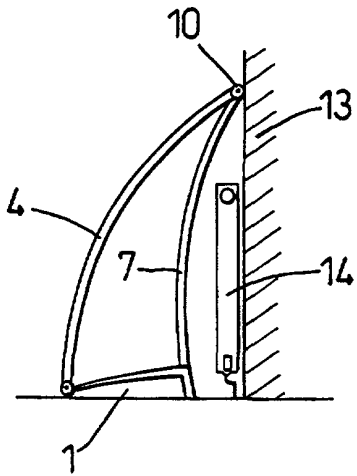


Fig. 3

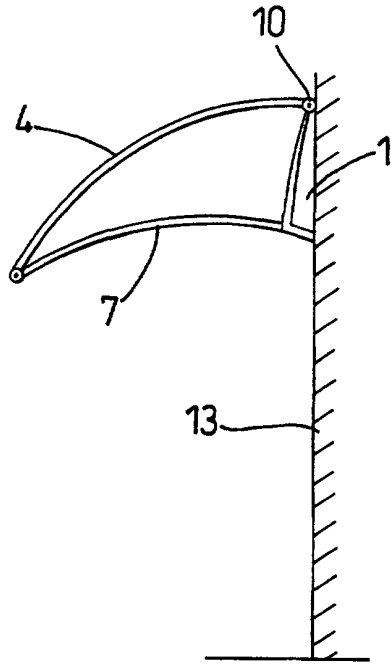


Fig. 4

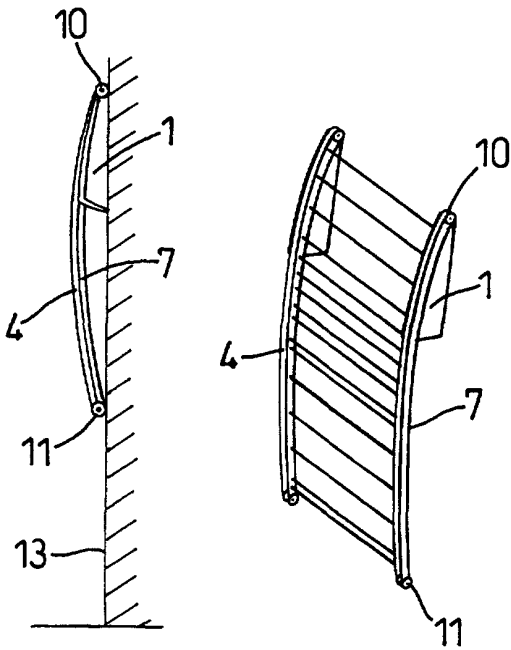


Fig. 5

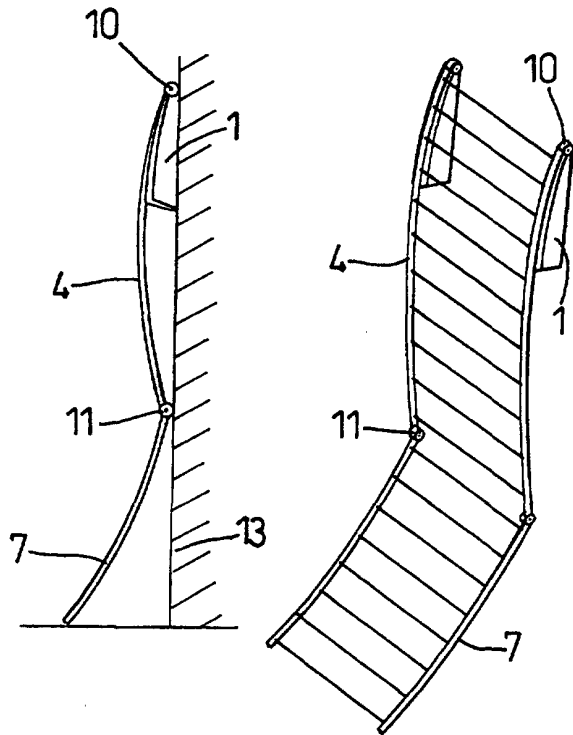


Fig. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 01 30 0979

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
A	US 4 739 888 A (STEINER WALTER) 26 April 1988 (1988-04-26) * the whole document * ----	1	D06F57/08 D06F57/12
A	GB 1 008 608 A (BRINNAND SEDDON; AUBREY GEORGE CARROL) 27 October 1965 (1965-10-27) * the whole document * ----	1	
P, A	EP 1 029 966 A (LOH KG HAILO WERK) 23 August 2000 (2000-08-23) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.CI.7)
			D06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 May 2001	Examiner Norman, P
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 0979

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22-05-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4739888 A	26-04-1988	EP 0260332 A AT 70576 T DE 3683051 D JP 63071295 A	23-03-1988 15-01-1992 30-01-1992 31-03-1988
GB 1008608 A	27-10-1965	NONE	
EP 1029966 A	23-08-2000	DE 19906536 A	24-08-2000

EPO FORM P0459

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