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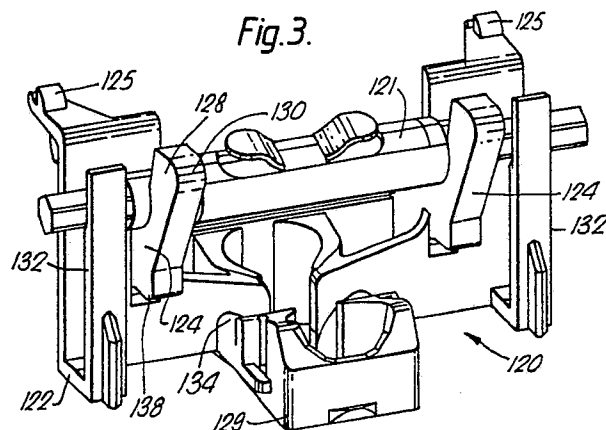
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**Venetian blind tiltroll support.**

A tilt shaft and tilt roll support is provided for a venetian blind headrail and includes a base (122) having bearing portions (124) for supporting a tilt roll (121) which can be rotated by a tilt rod (123). A guide surface (134) is provided to guide a first lift cord (136) downwardly through an opening in the web (112) of the headrail. An upstanding arm (128) has an upper surface (130) closely spaced from the beaded rim (116) of the front flange (114) of the headrail, and an upstanding member (132) together serve to separate a second lift cord (137) from becoming tangled with the first lift cord (136).



**EP 0 373 787 A1**

## VENETIAN BLIND TILTROLL SUPPORT

The present invention relates to venetian blinds, and in particular to a tilt shaft and tilt roll support mountable in a channel section venetian blind headrail.

It is conventional for venetian blind headrails to be of channel cross-section and to have a web portion, two flanges, the flanges each having a beaded rim at their free edges. In one form of blind a number of supports are mounted and serve to carry a common tilt shaft and an equal number of tilt rolls on which the ladders which support the slat are mounted to enable the slats to be tilted, and also they include an opening in the base, a peripheral surface of the opening serving, in use, for guiding a flexible lift element downwardly out of the venetian blind headrail. There are always at least two such supports in a headrail and sometimes many more if the venetian blind is very wide. A problem arises in arranging for the lift elements, usually lift cords, not to become entangled within the headrail or escaping therefrom during the assembly stages and it is usually very difficult to thread these lift cords into place, particularly if the tilt rolls themselves are positioned in their supports.

It is now proposed, according to the present invention, to provide a tilt shaft and tilt roll support mountable in a channel section venetian blind headrail of a given size, said headrail including a web portion and two flanges, said flanges each having a beaded rim at their free edges, said headrail housing at least two tilt rolls, a tilt shaft drivingly engaging said tilt rolls and first and second flexible lift elements extending along and downwardly from said headrail, said support comprising a base shaped to be positioned adjacent the web portion of the venetian blind headrail, at least one upstanding arm having a free end sufficiently close to or engageable against one of said rims, to allow a flexible lift element to be forced past, bearing portions on said base for receiving and supporting a tilt roll and/or tilt shaft, an opening in the base, a peripheral surface of the opening serving, in use, for guiding a first flexible lift element downwardly out of the venetian blind headrail, at least one upstanding member extending upwardly from the base forwardly or rearwardly of the opening to a level above the height of the peripheral surface of the opening, whereby said upstanding member acts as a guide to separate at least a second flexible lift element from said first flexible lift element, an upper portion of said upstanding member, positioned closely adjacent a confronting one of said bearing portions having a lower surface spaced from said upstanding member by an amount sufficient to allow said first flexible lift ele-

ment to be manipulated into place below said lower surface.

With such a structure of support, the upstanding member is used to separate the second and any further lift cords from the first lift cord which passes downwardly through the opening of the first support within the headrail. At the next support, the upstanding member there serves to separate the second lift cord from the third or further lift cords and so on.

Because the upper portion of the upstanding arm is positioned closely adjacent the confronting one of the beaded rims one can thread the lift cord therebetween even when the tilt roll support and its tilt roll are mounted in the headrail.

Advantageously, the at least one upstanding arm is chamfered and may also be resilient to facilitate insertion of the cord between the chamfered upper end and an adjacent rim of the venetian blind headrail.

The upstanding member may be formed in the base immediately adjacent the opening and the confronting bearing portion may be laterally spaced from its associated upstanding member, the lower surface of the confronting bearing portion being located below the upper surface of the upstanding portion, the lateral spacing then left is sufficient to allow the lift cord to be manipulated into place below the lower surface.

In one particular construction, there are two upstanding members and two laterally spaced confronting bearing portions each spaced laterally outwardly of the nearer of the upstanding members.

In an alternative construction, the upstanding member can have substantially the same height as the upstanding arm.

Advantageously, the confronting bearing portions are each spaced laterally inwardly of said upstanding members.

Said at least one upstanding member may have a distal end close to or engageable against the tilt shaft and/or tilt roll when in use.

These measures in particular allow the threading of lift cords with the tilt shaft and tilt rolls already in position.

In order to retain the support in place, it preferably comprises engaging means which engage under the other of the beaded rims of a headrail. In such a construction, the engaging means may comprise further resilient arms extending upwardly at longitudinally spaced locations from the base portion, and another portion protruding through an opening in the headrail web portion.

In order that the invention may more readily be understood, the following description is given,

merely by way of example, reference being made to the accompanying drawings, in which:-

Figure 1 is a longitudinal cross-section through the headrail of a venetian blind, incorporating one embodiment of tilt roll support according to the invention;

Figure 2 is an end view of the headrail and support of Figure 1;

Figure 3 is an enlarged perspective view of a second and preferred embodiment of the support according to the invention;

Figure 4 is a perspective view from the other side illustrating the support of Figure 1, mounted in a headrail with the lift cord being inserted; and

Figure 5 is a similar view with the lift cord actually inserted.

Referring first to Figure 1, there is illustrated therein a headrail 10 including a web 12 and two side flanges 14, each having an inturned beaded rim 16 at their upper free edges. The headrail web 12 has an opening 18 and at this location is positioned a support 20 according to the invention. This support includes a base 22 which has a portion protruding through the opening 18, the base including two laterally spaced apart bearing portions 24 having open-topped cylindrical recesses for accommodating a tilt roll (not shown) for rotation about an axis 26 (Figure 1). Forming part of each portion 24 is an integral upstanding arm 28 which extends up to be closely adjacent to the front one of said inturned beaded rims 16. The top surface of the upstanding arm 28 is chamfered at 30.

Mounted within or forming part of the base 22 are two laterally spaced apart upstanding members 32 which extend forwardly (or rearwardly if desired), to a level above the height of a peripheral surface 34 serving to define a guide for a flexible lift element, such as a lift cord 36, which passes laterally of the support, that is longitudinally of the headrail, and then downwardly through the base and thus through the opening 18. The peripheral surface 24 and the upstanding members 32 conveniently form part of a separate insert mounted within the base 22. It will be seen that the upper surface of the upstanding members 32 has spaced therefrom a confronting lower portion 38 of the bearing part 24. The uppermost tip of the upstanding member 32 extends above the lower surface of the confronting portion 38 and is laterally spaced therefrom, as can be seen from Figure 1. The spacing is sufficient to allow the cord 36 to be threaded under the portion 38 and over the top of the upstanding member 32.

As can be seen in Figure 2 in particular, a further lift cord 37 is shown passing to the right and extending to a subsequent support (not shown) similar to the support 20. The upstanding member 32 and the confronting portion 38 prevent this cord

37 from becoming entangled with the cord 36. The upstanding arm and confronting rim 16, 28 will prevent the further cord 37 from accidentally escaping from the headrail. This is particularly helpful while handling the headrail during assembly.

At the rear the bearing portions 24 are provided with upstanding holding members 25 which engage under the rear beaded rim 16 to hold the support 20 in place.

If reference is now made to Figure 3, a second embodiment is shown and like parts have been indicated by like reference numerals, with the addition of 100.

A support 120 is provided with a base 122 which has integrally formed therewith two bearing parts 124 for mounting for rotation a tilt roll 121 which can be driven by a tilt shaft 123. Rearwardly and upwardly extending elements 125 engage under the rear beaded rim 116. A central portion 129 of the base 122 extends for a distance between the front and rear flanges 114. Formed in this central portion is a guide surface 134 leading down to an opening (which cannot readily be seen in the drawings) leading into an opening in the web portion 112 of the channel section headrail. An upstanding arm 128 is formed integrally with the bearing parts 124 and has a curved or chamfered upper surface 130 which is closely spaced from the front rim 116.

Projecting upwardly from the base 122 are again two laterally spaced upstanding members 132, whereby in this embodiment the confronting bearing parts 124 are spaced inwardly of the upstanding members 132. The upstanding members 132 each have a preferably resilient distal end projecting well above a confronting surface 138 on the adjacent bearing part 124 and ending close to or against the tilt shaft 123, so as provide a restricted passage for a lift cord.

The method of assembly is shown in Figure 4 in which a portion 136 A of a lift cord 136 is shown being fed around the chamfered surface 130 of the upstanding arm 128. It will be seen that the cord is being fed behind the upstanding member 132, the upper surface of which is above the confronting surface 138 of the bearing portion 124. The part 136A of the cord 136 is then fed round chamfered surface 130, between upstanding member 132 and tilt shaft 123 and underneath confronting surface 138 to take up the position illustrated in Figure 4. Each subsequent cord 137 can then pass freely to the right, as viewed in Figure 4, of the upstanding member 132 so that there will be no fear of it becoming entangled with the first lift cord 136. As is apparent from Figures 4 and 5 the above cord threading operations can be performed with the tilt shaft and tilt rolls in mounted position.

## Claims

1. A tilt shaft and tilt roll support (20, 120) mountable in a channel section venetian blind headrail (10, 110) of a given size, said headrail including a web portion (12, 112) and two flanges (14, 114), said flanges each having a beaded rim (16, 116) at their free edges, said headrail housing at least two tilt rolls (121), a tilt shaft (123) drivingly engaging said tilt rolls and first and second flexible lift elements (36, 136, 37, 137) extending along and downwardly from said headrail, said support comprising a base (22, 122) shaped to be positioned adjacent the web portion of the venetian blind headrail, at least one upstanding arm (28, 128) having a free end sufficiently close to or engageable against one of said rims, to allow a flexible lift element to be forced past, bearing portions (24, 124) on said base for receiving and supporting a tilt roll, and/or tilt shaft an opening (18) in the base, a peripheral surface of the opening serving, in use, for guiding a first flexible lift element (36, 136) downwardly out of the venetian blind headrail, at least one upstanding member (32, 132) extending upwardly from the base forwardly or rearwardly of the opening to a level above the height of the peripheral surface of the opening, whereby said upstanding member acts as a guide to separate at least a second flexible lift (37, 137) element from said first flexible lift element (36, 136), an upper portion of said upstanding member, positioned closely adjacent a confronting one of said bearing portions each of said bearing portions having a lower surface (38, 138) spaced from said upstanding member by an amount sufficient to allow said first flexible lift element to be manipulated into place below said lower surface.

2. A support according to claim 1, characterised in that said at least one upstanding arm (28, 128) is chamfered (at 30, 130) to facilitate insertion of a cord between said chamfered upper end and an adjacent rim (116) of the venetian blind headrail.

3. A support according to claim 1 or 2, characterised in that said at least one upstanding arm (28, 128) is resiliently deflectable in a direction away from an adjacent rim of the venetian blind headrail to facilitate insertion of a cord.

4. A support according to claim 1, characterised in that said at least one upstanding member (32, 132) is formed in said base immediately adjacent the opening.

5. A support according to any one of claims 1 to 4, characterised in that the confronting bearing portion (38, 138) is laterally spaced from its associated upstanding member (32, 132), the lower surface of said confronting bearing portion being located below the upper surface of the upstanding member.

6. A support according to claim 5, characterised in that there are two upstanding members (32, 132) and two laterally spaced confronting bearing portions (38, 138) each spaced laterally outwardly of the nearer of said upstanding members.

7. A support according to claim 5 when appendant to claim 3, characterised in that said at least one upstanding member (32, 132) is of substantially the same height as said upstanding arm (28, 138).

8. A support according to claim 7, characterised in that the confronting bearing portions are each spaced laterally inwardly of said at least one upstanding member.

9. A support according to claims 7 or 8, characterised in that said at least one upstanding member has a distal end close to or engageable against the tilt shaft and/or tilt roll when in use.

10. A support according to any preceding claim further comprising engaging means (25, 125) to engage under the other of said beaded rims (16, 116) of a headrail to hold said support in place.

11. A support according to claim 10, characterised in that said engaging means (25, 125) comprise further resilient arms extending upwardly at longitudinally spaced locations from said base portion (22, 122) and another portion protruding through an opening (18) in the headrail web portion.

12. a venetian blind including at least one tilt shaft and tilt roll support according to any preceding claim.

Fig.1.

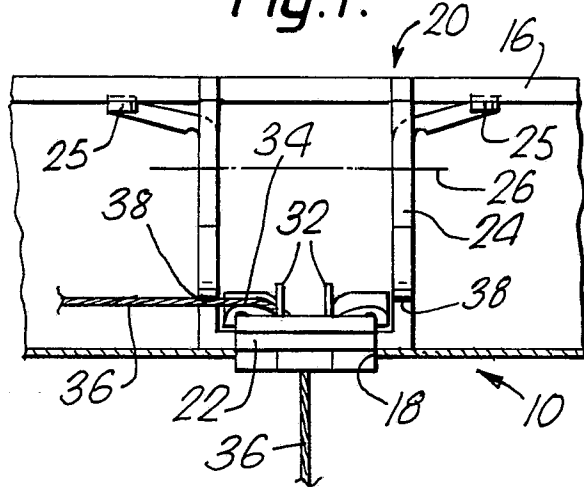


Fig.2.

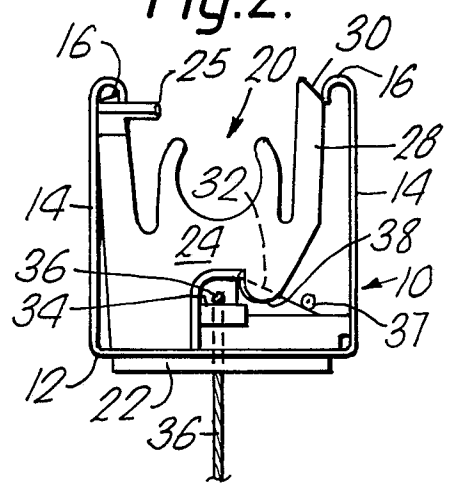


Fig.3.

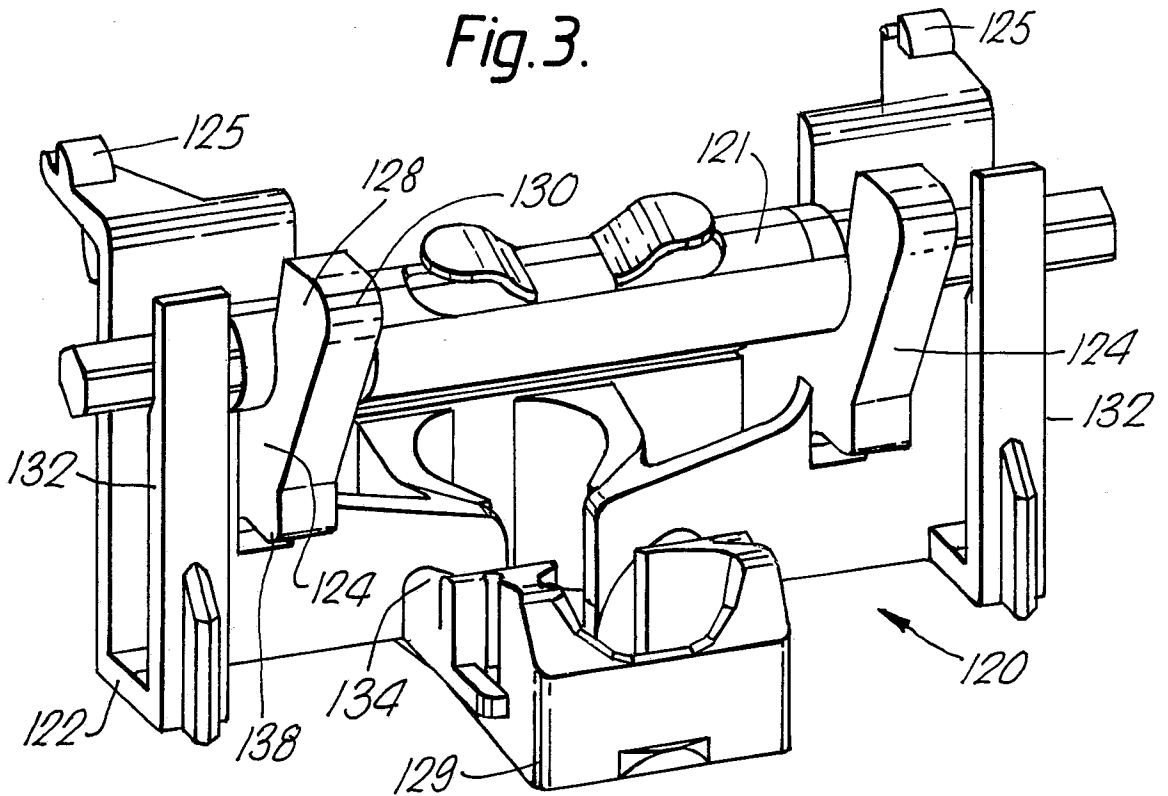


Fig. 5.

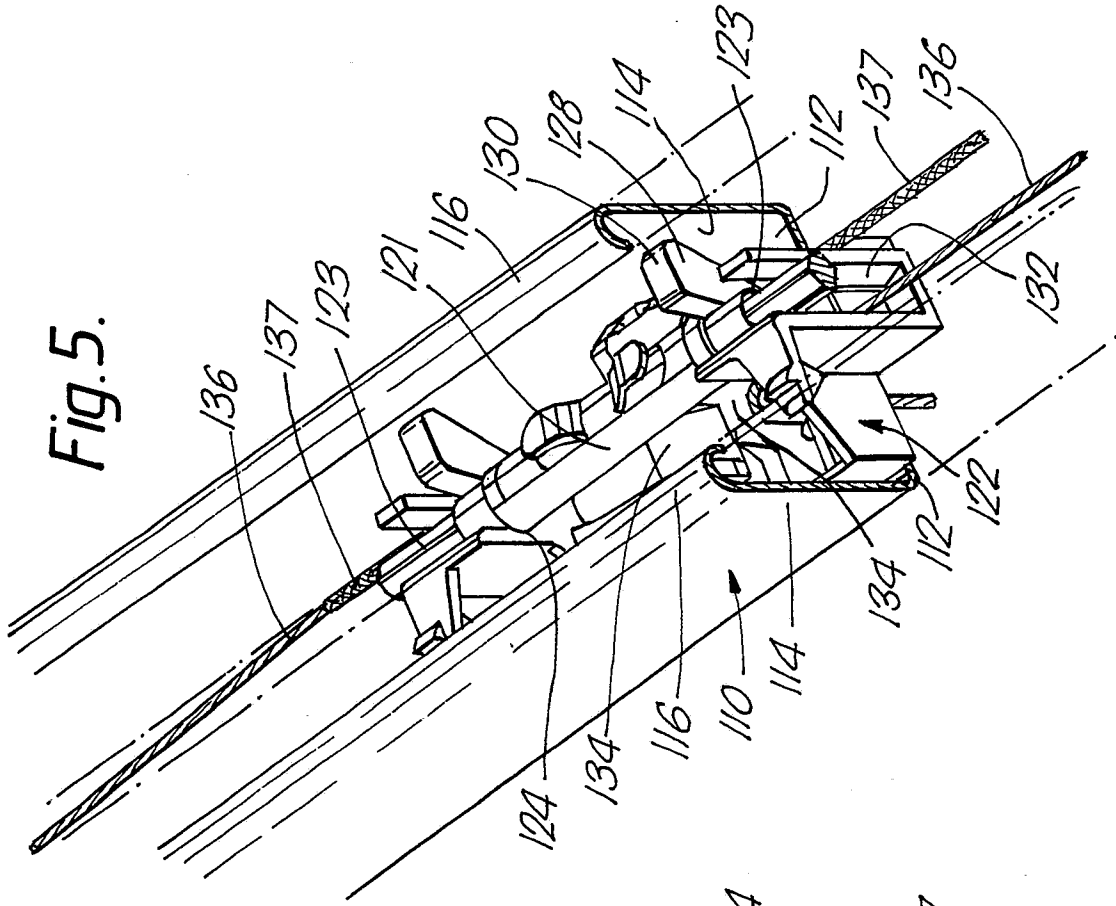
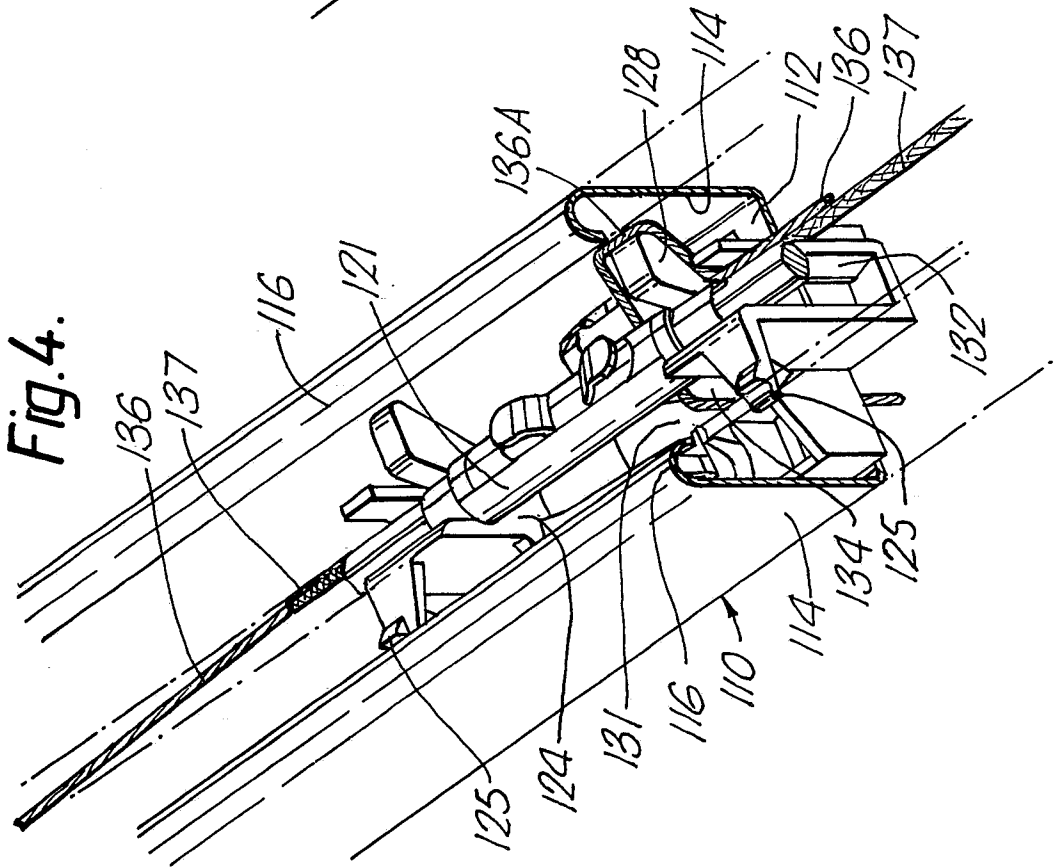


Fig. 4.





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-2 120 716 (LEVOLOR LORENTZEN INC.) * Page 2, lines 58-65,1-71,78-98; figures 1,8,9,14 * ---	1	E 06 B 9/307
A	NL-A-6 407 120 (HUNTER DOUGLAS) * Page 3; figures 1-3 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 06 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23-02-1990	Examiner KUKIDIS S.
<b>CATEGORY OF CITED DOCUMENTS</b> 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		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	