(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 520 729 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.04.2005 Bulletin 2005/14

(51) Int Cl.[7]: **B42F 7/12**

(21) Application number: **03026658.9**

(22) Date of filing: **19.11.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **11.08.2003 CN 03204880 U**

(71) Applicant: **Global Industries Holdings Ltd.**
Taichung City, Taiwan 408 (TW)

(72) Inventor: **Qinghao, Yang**
Taichung City, Taiwan 408 (TW)

(74) Representative: **Viering, Jentschura & Partner**
Steinsdorfstrasse 6
80538 München (DE)

(54) Loose-leaf type storage device

(57) A loose-leaf type storage device includes a pivot shaft **(20)**, a plurality of storage cases **(10)**, each storage cases **(10)** each having a plurality of barrels **(13)** axially aligned in a line at one side and respectively coupled to the pivot shaft **(20)**, and a loose-leaf positioning structure provided between the pivot shaft **(20)** and the storage cases **(10)** for enabling the storage cases **(10)** to be turned about the pivot shaft **(20)** and selectively positioned in one of a series of angles.

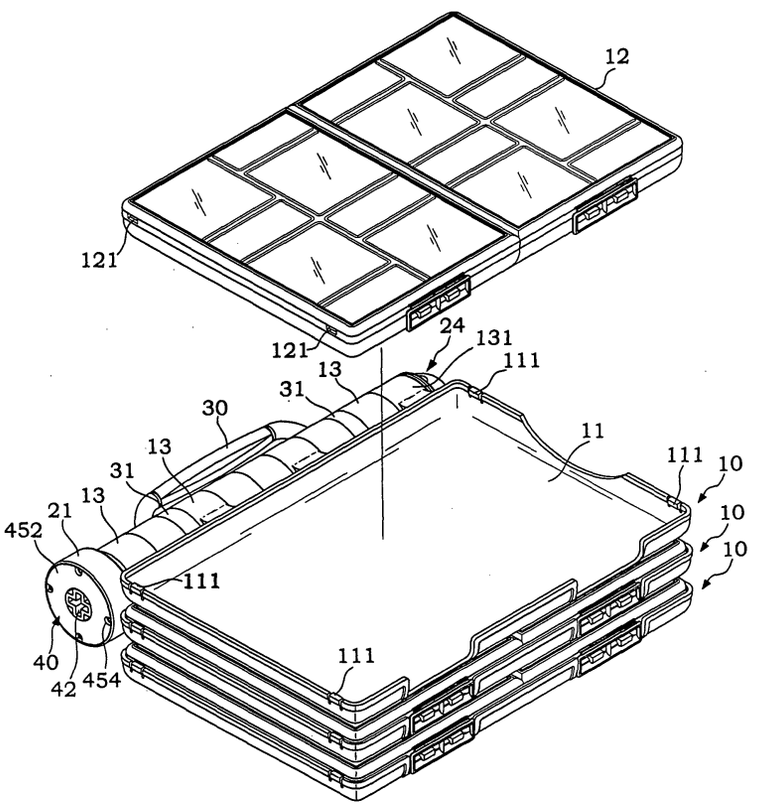

FIG. 1

EP 1 520 729 A1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention:

[0001] The present invention relates to a storage device for keeping accessories and, more specifically to a loose-leaf type storage device, which is comprised of a plurality of storage cases pivotally coupled to a cotton shaft.

2. Description of the Related Art:

[0002] An accessories storage case is a case-like container comprising a plurality of storage chambers of different sizes for keeping accessories, and a plurality of hinged lids adapted to close the storage chambers respectively. A number of storage cases may be installed in a cabinet or rack for keeping a big amount of different accessories. There is also known a storage case comprised of a plurality of cases that can be set into a stack, or extended out. The main drawback of conventional storage cases is that the user can not conveniently visually check all storage items at a glance. Further conventional storage cases are specifically designed to be put on a flat surface when arranging the storage items. Putting these storage cases in vertical or hanging these storage cases on a wall may cause storage items to fall to the ground.

SUMMARY OF THE INVENTION

[0003] The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a loose-leaf storage device, which can be selectively placed on a flat surface in horizontal, supported on a stand in vertical, or hung on a wall. It is another object of the present invention to provide a loose-leaf storage device, which has the storage cases thereof turnable relative to one another and respectively set in one of a series of angles.

[0004] To achieve these and other objects of the present invention, the loose-leaf type storage device comprises a plurality of storage cases, the storage cases each comprising a plurality of barrels axially aligned in a line at one side; a pivot shaft inserted through the barrels of the storage cases for enabling the storage cases to be respectively turned about the pivot shaft, the pivot shaft having a hollow head disposed at a first end thereof and stopped at one end of the aligned barrels and an end cap fastened to a second end thereof and stopped at an opposite end of the aligned barrels; and a loose-leaf positioning structure provided between the pivot shaft and the storage cases for enabling the storage cases to be turned about the pivot shaft and selectively positioned in one of a series of angles, the loose-leaf positioning structure comprising a plurality of spring leaves respectively formed integral with the pivot shaft and longitudinally aligned in a line, the spring leaves each having a free end provided with a raised engagement portion, and a plurality of locating grooves respectively formed inside the barrels for engagement with the raised engagement portions of the spring leaves.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is an exploded view of a loose-leaf type storage device according to the present invention.

[0006] FIG. 2 is a front plain view of the loose-leaf type storage device according to the present invention.

[0007] FIG. 3 is a rear plain view of the loose-leaf type storage device according to the present invention.

[0008] FIG. 4 is a left plain view of the loose-leaf type storage device according to the present invention.

[0009] FIG. 5A is an end plain view of the loose-leaf type storage device according to the present invention.

[0010] FIG. 5B is schematic end view of the present invention showing an adjustment example of the angular positions of the storage cases.

[0011] FIG. 5C is schematic end view of the present invention, showing another adjustment example of the angular positions of the storage cases.

[0012] FIG. 6 is an exploded view in an enlarged scale of a part of the loose-leaf storage device according to the present invention.

[0013] FIG. 7 is an exploded view in an enlarged scale of the rotary anchoring structure of the loose-leaf type storage device according to the present invention.

[0014] FIG. 8 is an exploded view showing the use of the loose-leaf type storage device with a stand.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] Referring to FIGS. 1, 2, and 6, a loose-leaf type storage device is shown comprised of a pivot shaft **20**, and a plurality of flat rectangular storage cases **10**. Each flat rectangular storage case **10** comprises a flat rectangular tray **11** and a flat rectangular case **12**. The tray **11** and the case **12** are respectively molded from plastics. The tray **11** is adapted to accommodate the case **12**. The case **12** defines a plurality of storage compartments respectively covered with a respective transparent plastic lid. A positioning structure is provided between the tray **11** and the case **12** so that the case **12** can be positively held in position when put in the tray **11**. The tray **11** comprises a plurality of projecting strips **131** aligned at one long side, and a plurality of barrels **13** respectively formed integral with the projecting strips **131** and aligned in a line. The projecting strips **131** of the trays **11** of the flat rectangular storage cases **10** are so arranged that the barrels **13** of the trays **11** of the flat rectangular storage cases **10** are aligned in a line for the insertion of the pivot shaft **20**. The pivot shaft **20** is in-

serted through the barrels **13** of the trays **11** of the flat rectangular storage cases **10**, having a hollow head **21** disposed at one end, namely, the first and stopped at one end of the aligned barrels **13** of the trays **11** of the flat rectangular storage cases **10** and the other end, namely, the second end extended out of the other end of the aligned barrels **13** of the trays **11** of the flat rectangular storage cases **10** and mounted with an end cap **24**, which is stopped at the other end of the aligned barrels **13** of the trays **11** of the flat rectangular storage cases **10**. After installation of the pivot shaft **20** in the aligned barrels **13** of the trays **11** of the flat rectangular storage cases **10**, the trays **11** can be respectively turned about the pivot shaft **20**.

[0016] There is a loose-leaf (tray) positioning structure provided between the pivot shaft **20** and the trays **11** of the flat rectangular storage cases **10**. As illustrated in FIGS. 1 and 6, the loose-leaf positioning structure comprises a plurality of spring leaves **22** respectively formed integral with the pivot shaft **20** and longitudinally aligned in a line, each spring leaf **22** having a raised engagement portion **221** at the free end, and a plurality of locating grooves **132** respectively formed inside the barrels **13**. When turning one tray **11** about the pivot shaft **20** to a particular angle, the locating grooves **132** of the barrels **13** of the tray **11** are forced into engagement with the raised engagement portions **221** of the corresponding spring leaves **22** at the pivot shaft **20**, and therefore the tray **11** is locked in position. By applying a biasing force to the tray **11**, the locating grooves **132** of the barrels **13** of the tray **11** are disengaged from the raised engagement portions **221** of the corresponding spring leaves **22** at the pivot shaft **20**.

[0017] Referring to FIGS. 5A, 5B, and 5C, after loading of the cases **12** in the trays **11**, the storage cases **10** can be arranged in a stack (see FIG. 5A), or turned about the pivot shaft **20** relative to one another to the desired angle (see FIGS. 5B and 5C).

[0018] There is also provided a positioning structure adapted to lock the case **12** to the corresponding tray **11**. The positioning structure comprises a plurality of springy hooks **111** respectively formed integral with the peripheral wall of the tray **11**, and a plurality of retaining grooves **121** respectively disposed at the peripheral wall of the case **12** and adapted to receive the springy hooks **111** at the tray **11**.

[0019] Referring to FIGS. 1 and 6 again, a handle **30** is provided having two barrels **31** extended from the two distal ends and respectively coupled to the pivot shaft **20**. Through the handle **30**, the user can conveniently carry the loose-leaf type storage device by hand.

[0020] Referring to FIG. 6 again, the aforesaid end cap **24** comprises a semispherical head **241**, a plug portion **242** insertable into the second end (the end remote from the head **21**) of the pivot shaft **20**, and an angled locating slot **253** formed in the plug portion **242**. The pivot shaft **20** has a projecting block **25** disposed inside the second end. During installation, the angled locating slot **253** is aimed at the projecting block **25**, and then the plug portion **242** of the end cap **24** is plugged into the second end of the pivot shaft **20**, and then the end cap **24** is rotated through an angle relative to the pivot shaft **20**, and thus the end cap **24** is locked to the pivot shaft **20** and prohibited from axial movement relative to the pivot shaft **20**.

[0021] Referring to FIGS. 6~8, a rotary anchoring structure **40** is provided comprising a plurality of female screws **221** respectively axially disposed inside the hollow head **21** of the pivot shaft **20**, a cylindrical block **41** inserted into the hollow head **21**, the cylindrical block **41** having a peripheral stop flange **43** stopped outside the hollow head **21** of the pivot shaft **20**, a non-circular plug hole, for example, crossed plug hole **42** axially disposed at the center, and a springy pawl **44** projecting from the periphery outside the hollow head **21** of the pivot shaft **20**, a ratchet cap **45** capped on the cylindrical block **41**, the ratchet cap **45** comprises a ratchet **451** meshed with the springy pawl **44**, an outward peripheral flange **452** stopped outside the hollow head **21** of the pivot shaft **20**, a plurality of screw holes **453** disposed at the outward peripheral flange **451** and respectively connected to the female screws **221** inside the hollow head **21** of the pivot shaft **20** by screws **454**, and a center through hole **455** axially disposed at the center and aimed at the crossed plug hole **42**. A crossed-shaft stand **46** is inserted through the center through hole **455** and plugged into the crossed plug hole **42** to support the loose-leaf type storage device on a flat surface in vertical. When installed, the storage cases **10** can be turned with the pivot shaft **20** and the ratchet cap **45** relative to the cylindrical block **41** and the crossed-shaft stand **46** in one direction through 36o°.

[0022] Referring to FIG. 3, the trays **11** of the storage cases **10** each have a plurality of hang holes **14** for hanging on wall nails or the like.

[0023] As indicated above, the loose-leaf type storage device can be horizontally placed on a flat surface, or set in vertical and supported on a stand by means of the rotary anchoring structure **40**, or hang on a wall by means of the hanging holes **14** at the trays **11**.

[0024] When placed on a flat surface, set in vertical, or hung on a wall, the storage cases **10** can be respectively turned about the pivot shaft **10** relative to one another and then positioned in any of a series of angles by means of the engagement between the raised engagement portions **221** of the spring leaves **22** and the locating grooves **132** of the barrels **13** for convenient arrangement of storage items in the cases **12**. Through the handle **30**, the user can conveniently carry the loose-leaf type storage device by hand.

[0025] A prototype of loose-leaf type storage device has been constructed with the features of FIGS. 1~8. The loose-leaf type storage rack functions smoothly to provide all of the features discussed earlier.

[0026] Although a particular embodiment of the invention has been described in detail for purposes of illus-

tration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.

Claims

1. A loose-leaf type storage device comprising

a plurality of storage cases **(10),** said storage cases **(10)** each comprising a plurality of barrels **(13)** axially aligned in a line at one side;
a pivot shaft **(20)** inserted through the barrels **(13)** of said storage cases **(10)** for enabling said storage cases **(10)** to be respectively turned about said pivot shaft **(20)**, said pivot shaft **(20)** having a hollow head **(21)** disposed at a first end thereof and stopped at one end of said aligned barrels **(13)** and an end cap **(24)** fastened to a second end thereof and stopped at an opposite end of said aligned barrels **(13)**; and
a loose-leaf positioning structure provided between said pivot shaft **(20)** and said storage cases **(10)** for enabling said storage cases **(10)** to be turned about said pivot shaft **(20)** and selectively positioned in one of a series of angles, said loose-leaf positioning structure comprising a plurality of spring leaves **(22)** respectively formed integral with said pivot shaft **(20)** and longitudinally aligned in a line, said spring leaves **(22)** each having a free end provided with a raised engagement portion **(221)**, and a plurality of locating grooves **(132)** respectively formed inside said barrels **(13)** for engagement with the raised engagement portions **(221)** of said spring leaves **(22)**.

2. The loose-leaf type storage device as claimed in claim 1, wherein said storage cases **(10)** each comprise a case **(12)** and a tray **(11)** adapted to accommodate the case **(12)**.

3. The loose-leaf type storage device as claimed in claim 2, wherein said storage cases **(10)** each further comprise a tray positioning structure adapted to lock the cases **(12)** of said storage cases **(10)** to the corresponding trays **(11)**, said tray positioning structure comprising a plurality of springy hooks **(111)** respectively formed integral with the peripheral wall of the tray **(11)** of each of said storage cases **(10),** and a plurality of retaining grooves **(121)** respectively disposed at the peripheral wall of the case **(12)** of each of said storage cases **(!0)** and adapted to receive said springy hooks **(111)**.

4. The loose-leaf type storage device as claimed in claim 2, wherein said trays **(11)** of said storage cases **(10)** each comprise a plurality of projecting strips **(131)** aligned at one side, and said barrels **(13)** are respectively formed integral with said projecting strips **(131)** of said trays **(11)**.

5. The loose-leaf type storage device as claimed in claim 1, further comprising a handle **(30)**, said handle **(30)** comprising two barrels **(31)** disposed at two ends thereof and respectively coupled to said pivot shaft **(20)**.

6. The loose-leaf type storage device as claimed in claim 1, wherein said end cap **(24)** comprises semispherical head **(241)**, a plug portion **(242)** inserted into the second end of said pivot shaft **(20)**, and an angled locating slot **(253)** formed in said plug portion **(242)**; said pivot shaft **(20)** has a projecting block **(25)** disposed inside said second end and inserted into said angled locating slot **(253)** and adapted to lock said end cap **(24)** to said pivot shaft **(20)** upon a rotary motion of said end cap **(24)** relative to said pivot shaft **(20)**.

7. The loose-leaf type storage device as claimed in claim 1, wherein a rotary anchoring structure **(40)**, said rotary anchoring structure **(40)** comprising a cylindrical block **(41)** inserted into said hollow head **(20)** of said pivot shaft **(20)**, said cylindrical block **(41)** having a peripheral stop flange **(43)** stopped outside said hollow head **(21)** of said pivot shaft **(20)**, a non-circular plug hole **(42)** axially disposed at the center, and a springy pawl **(44)** projecting from the periphery thereof outside said hollow head **(21)** of said pivot shaft **(20)**, a ratchet cap **(45)** capped on said cylindrical block **(41)**, said ratchet cap **(45)** comprises a ratchet **(451)** meshed with said springy pawl **(44)**, and a center through hole **(455)** axially disposed at the center and aimed at said crossed plug hole **(42)** through which stand means is inserted and plugged into said non-circular plug hole **(42)** to support the loose-leaf type storage device on a flat surface in vertical.

8. The loose-leaf type storage device as claimed in claim 7, wherein said rotary anchoring structure **(40)** further comprises a plurality of female screws **(211)** formed inside said hollow head **(21)** of said pivot shaft **(20)**, an outward peripheral flange **(451)** formed integral with the periphery of said ratchet cap **(45)**, and a plurality of screw holes **(453)** disposed at said outward peripheral flange **(451)** and respectively connected to said female screws **(221)** inside said hollow head **(21)** of said pivot shaft **(20)** by screws **(454).**

9. The loose-leaf storage device as claimed in claim 1, further comprising a hanging structure, said

hanging structure comprising a plurality of hanging holes **(14)** formed in said storage cases **(10)** for hanging.

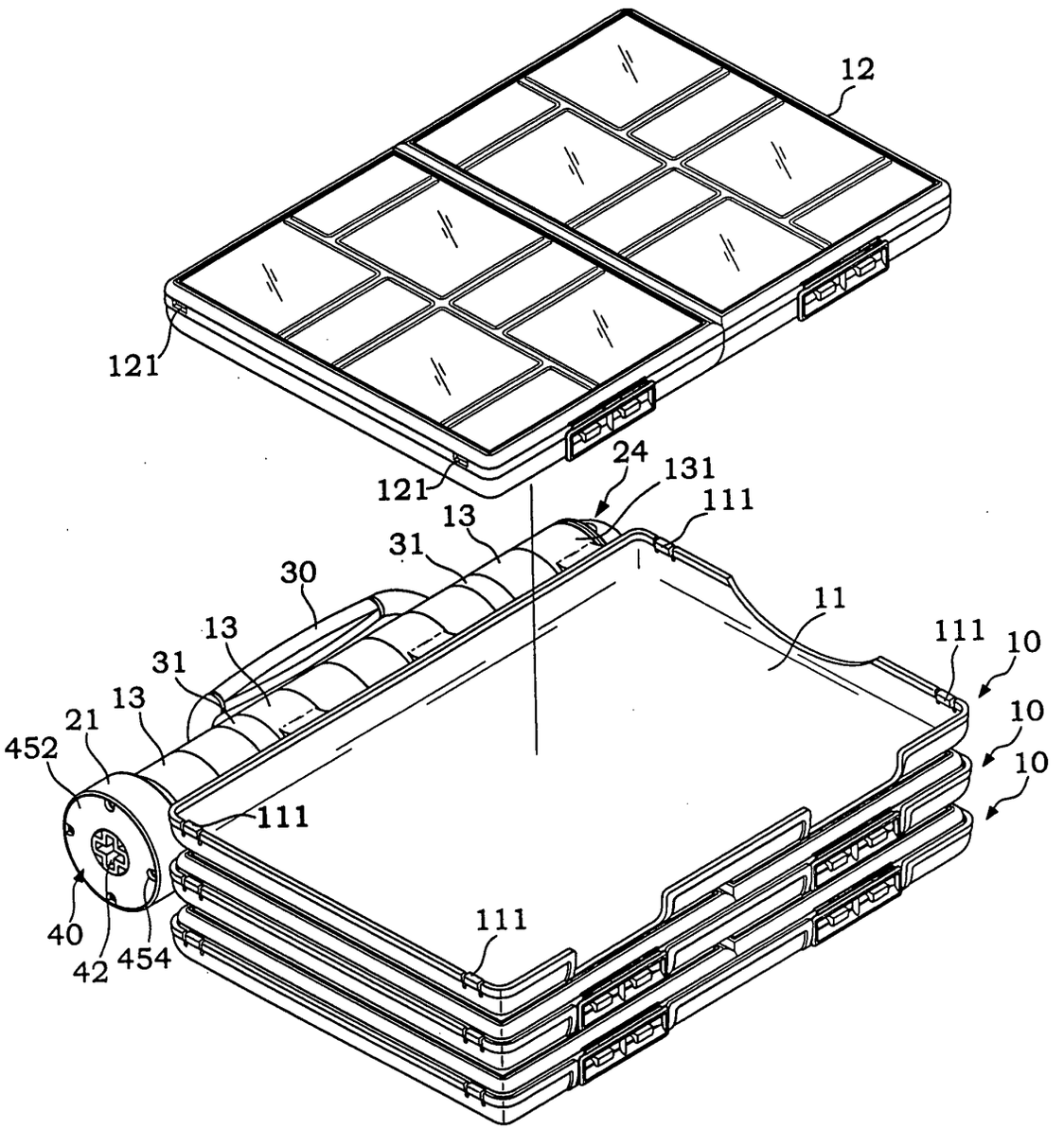
12
121
121
24
131
111
13
31
30
11
13
31
13
21
452
111
111
10
10
10
40
42
454

FIG. 1

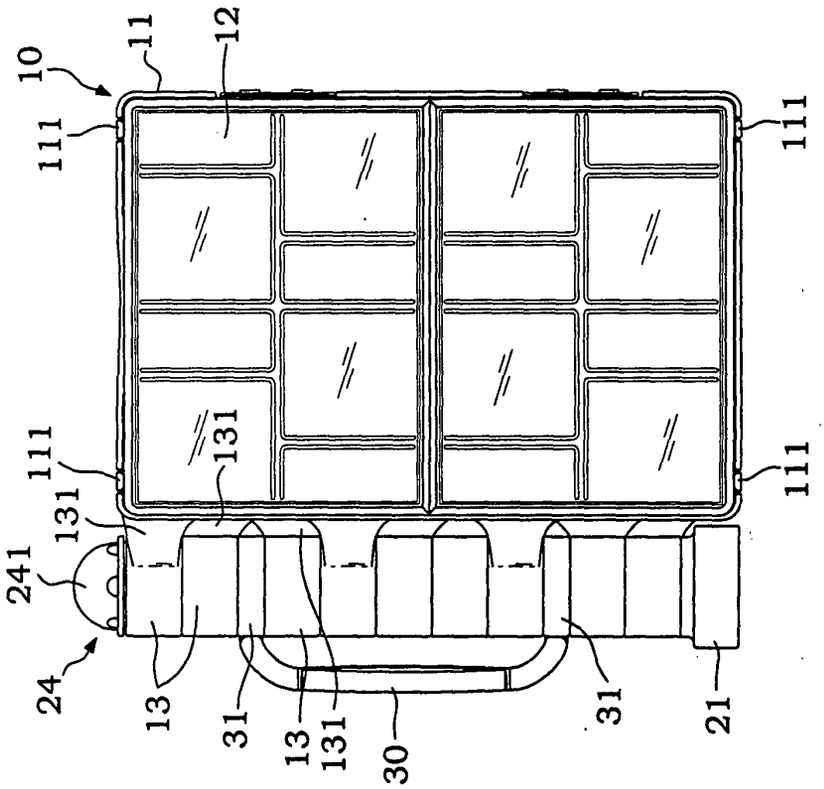

FIG.2

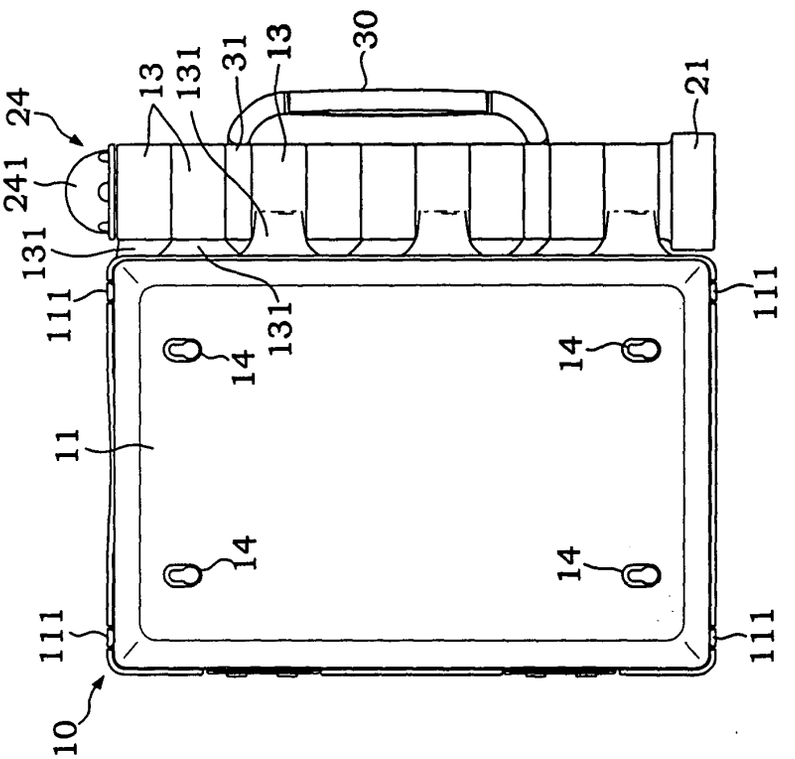

FIG.3

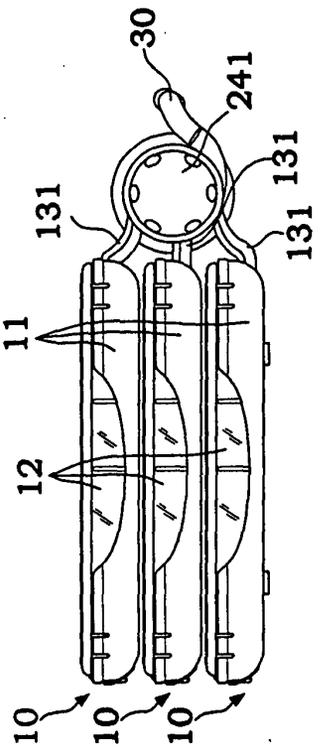
30
241
131
131
131
11
12
10
10
10

FIG.5A

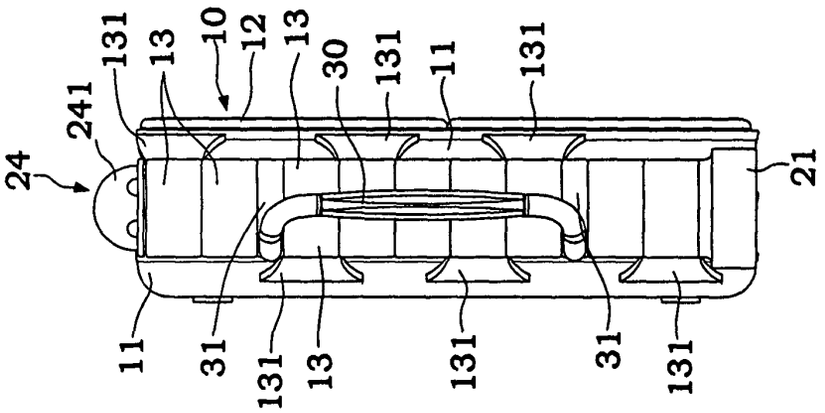
24
241
131
13
10
12
13
30
131
11
131
21
11
31
131
13
131
31
131

FIG.4

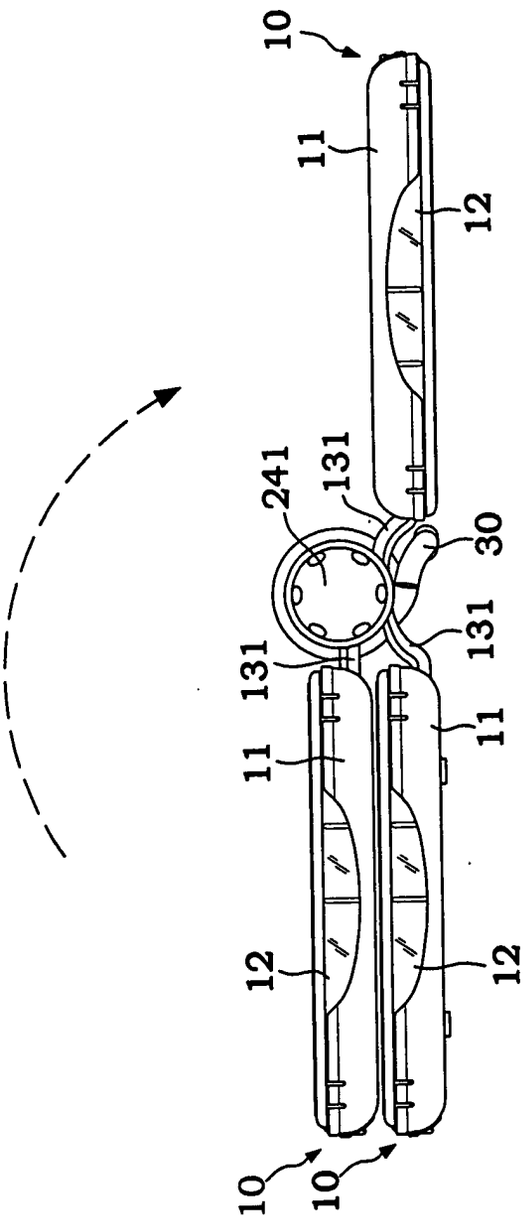

FIG.5B

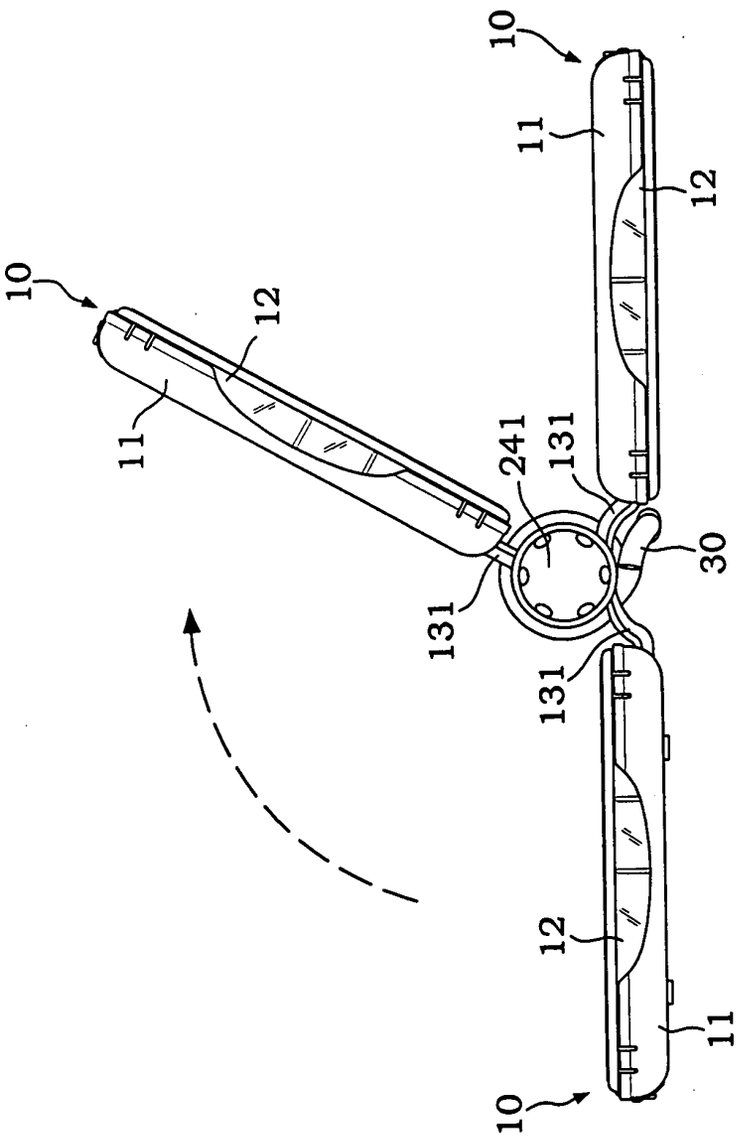

FIG.5C

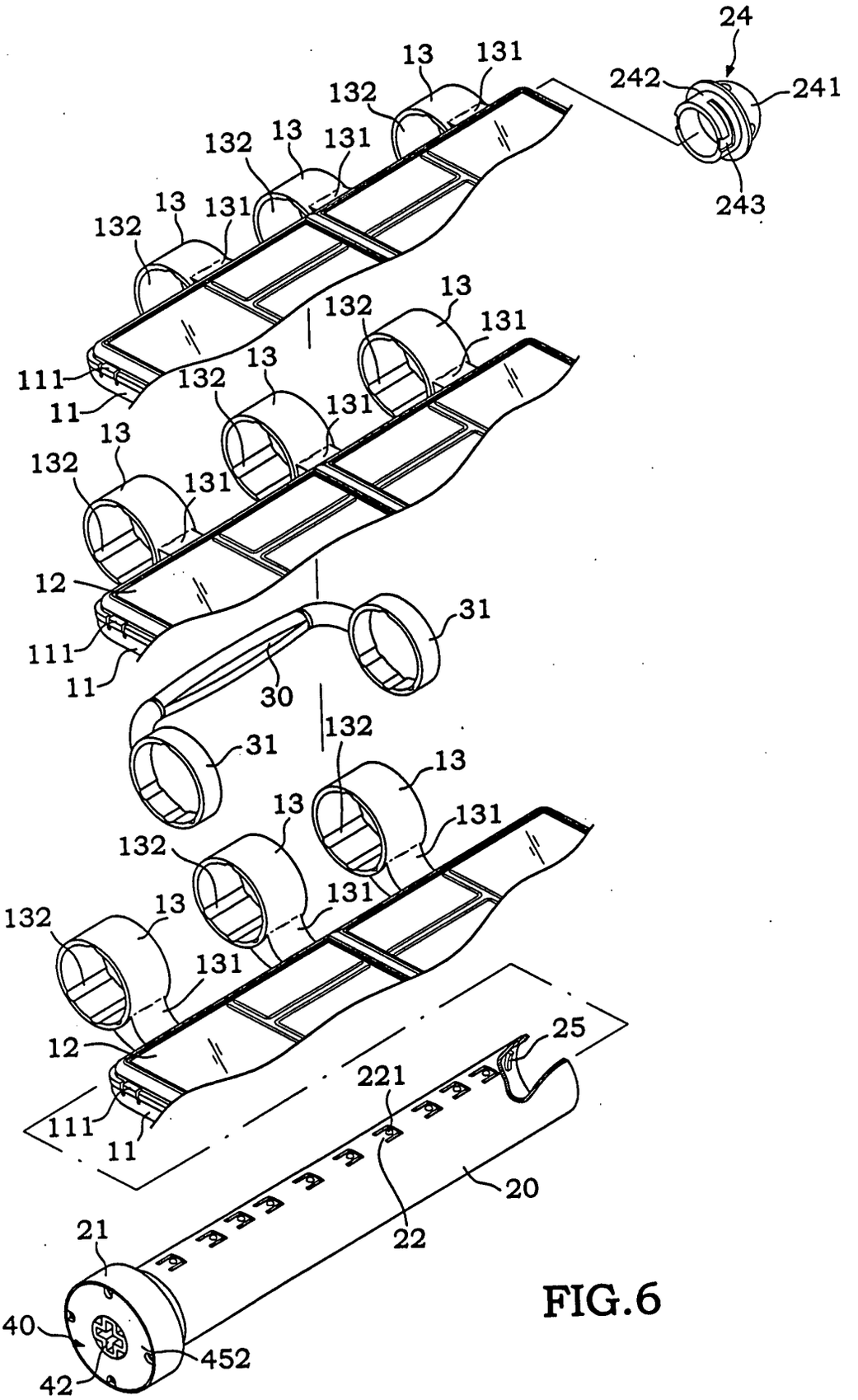

FIG.6

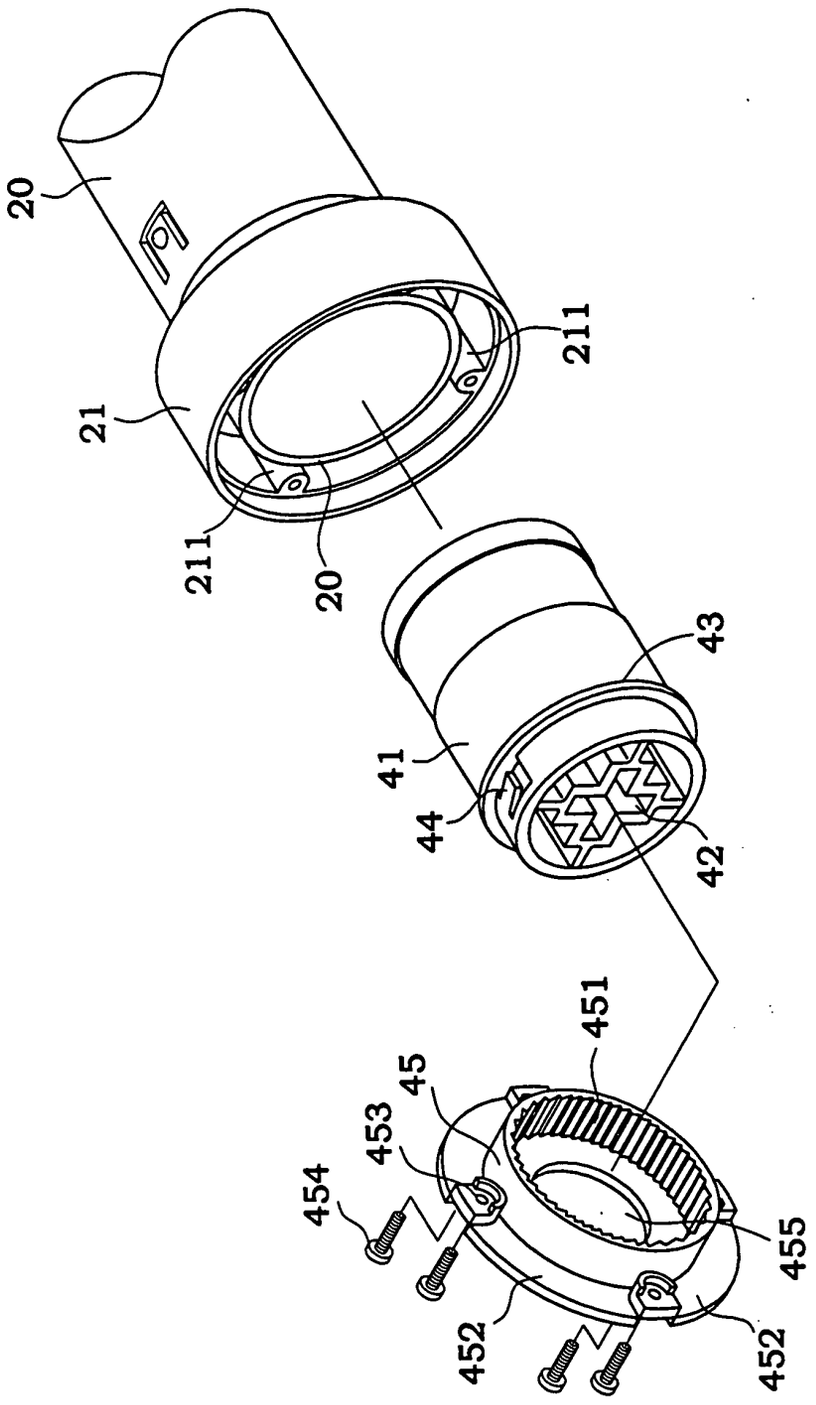

FIG.7

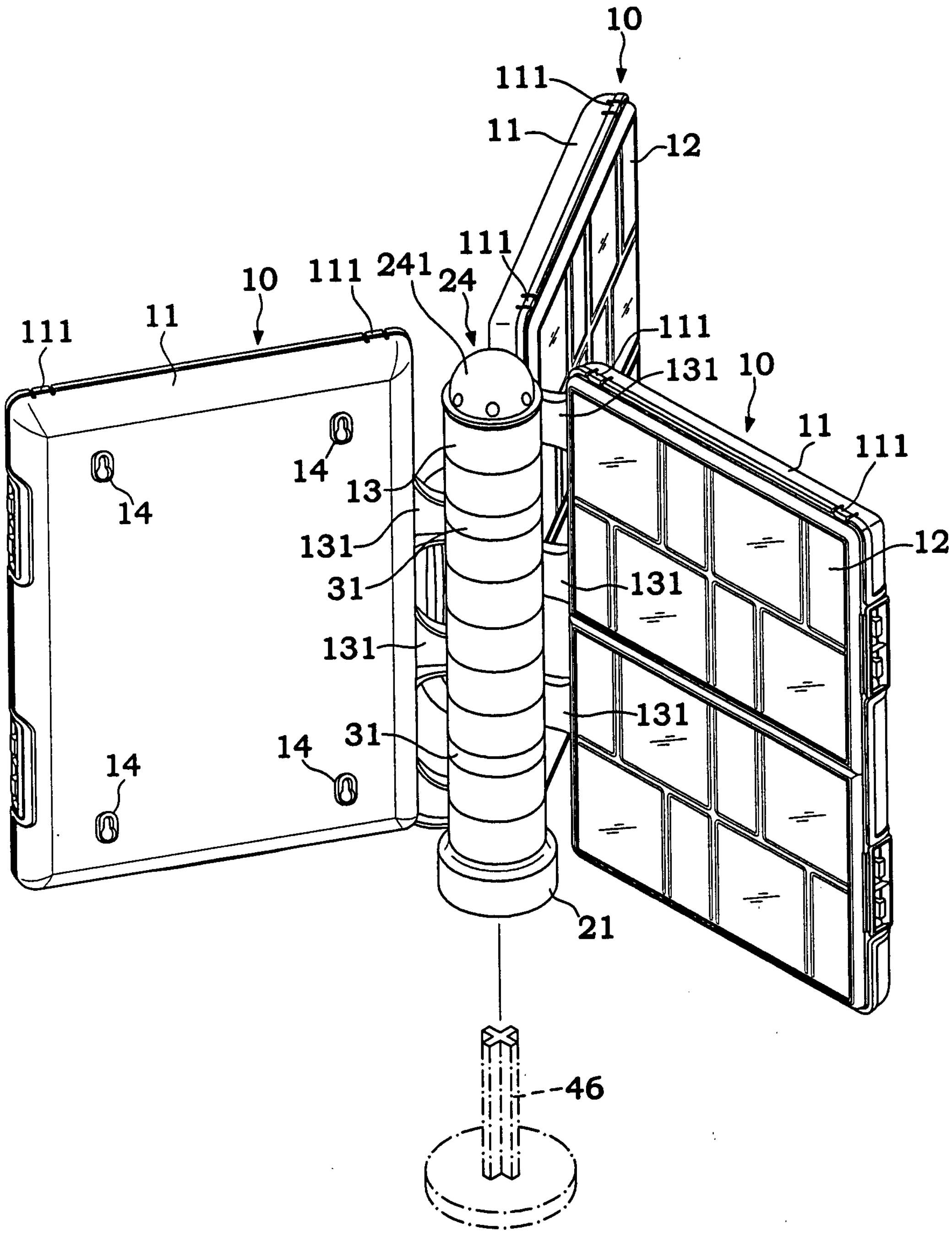
10
111
11
12
111
241
24
10
111
111
11
111
131
10
14
13
11
111
14
131
12
31
131
131
131
31
14
14
21
46

FIG.8

Office européen des brevets

RAPPORT DE RECHERCHE EUROPEENNE

Numéro de la demande
EP 03 02 6658

DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication concernée	CLASSEMENT DE LA DEMANDE (Int.Cl.7)
X Y	DE 949 161 C (HERMANN ROSSTEUTSCHER) 13 septembre 1956 (1956-09-13) * le document en entier *	1 2	B42F7/12
A	FR 1 017 642 A (TCHERNISHOFF) 12 décembre 1952 (1952-12-12) * le document en entier *	1-9	
Y	US 4 443 959 A (ACKERET PETER) 24 avril 1984 (1984-04-24) * figures *	2	
			DOMAINES TECHNIQUES RECHERCHES (Int.Cl.7)
			B42F

Le présent rapport a été établi pour toutes les revendications

Lieu de la recherche	Date d'achèvement de la recherche	Examinateur
Munich	2 décembre 2004	Louvion, B

CATEGORIE DES DOCUMENTS CITES

X : particulièrement pertinent à lui seul
Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie
A : arrière-plan technologique
O : divulgation non-écrite
P : document intercalaire

T : théorie ou principe à la base de l'invention
E : document de brevet antérieur, mais publié à la date de dépôt ou après cette date
D : cité dans la demande
L : cité pour d'autres raisons

& : membre de la même famille, document correspondant

EPO FORM 1503 03.82 (P04C02)

2

ANNEXE AU RAPPORT DE RECHERCHE EUROPEENNE RELATIF A LA DEMANDE DE BREVET EUROPEEN NO. EP 03 02 6658

La présente annexe indique les membres de la famille de brevets relatifs aux documents brevets cités dans le rapport de recherche européenne visé ci-dessus.
Lesdits members sont contenus au fichier informatique de l'Office européen des brevets à la date du
Les renseignements fournis sont donnés à titre indicatif et n'engagent pas la responsabilité de l'Office européen des brevets.

02-12-2004

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)	Date de publication
DE 949161 C	13-09-1956	AUCUN	
FR 1017642 A	12-12-1952	AUCUN	
US 4443959 A	24-04-1984	DE 3110025 A1	23-09-1982
		FR 2509155 A1	14-01-1983
		GB 2099792 A	15-12-1982
		IT 1155125 B	21-01-1987
		JP 57163647 A	07-10-1982

EPO FORM P0460

Pour tout renseignement concernant cette annexe : voir Journal Officiel de l'Office européen des brevets, No.12/82