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

(11) **EP 2 269 932 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.01.2011 Bulletin 2011/01

(51) Int Cl.:
B65H 37/00 *(2006.01)*

(21) Application number: **09164391.6**

(22) Date of filing: **02.07.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(71) Applicant: **SDI Corporation**
Chang Hua
Taiwan (CN)

(72) Inventor: **Wu, Chien-Lung**
Chang Hua (TW)

(74) Representative: **Viering, Jentschura & Partner**
Grillparzerstrasse 14
81675 München (DE)

Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Film transfer device with slidable protection cap

(57) A film transfer device with a slidable protection cap includes a case (10, 20) including a compartment (13, 23) and a receiving section (18, 28) connected with the compartment, and an opening section (15, 25) in proximity to the receiving section. A reel mechanism is disposed in the compartment. An application head assembly (40) is retained in the receiving section and includes an application head (60, 60a) exposed outside the opening sections. A protection cap (70) is slidably mounted in the receiving section between a first position and a second position. The application head concealed by the protection cap as the protection cap is in the first position. The application head exposed from the protection cap as the protection cap is in the second position.

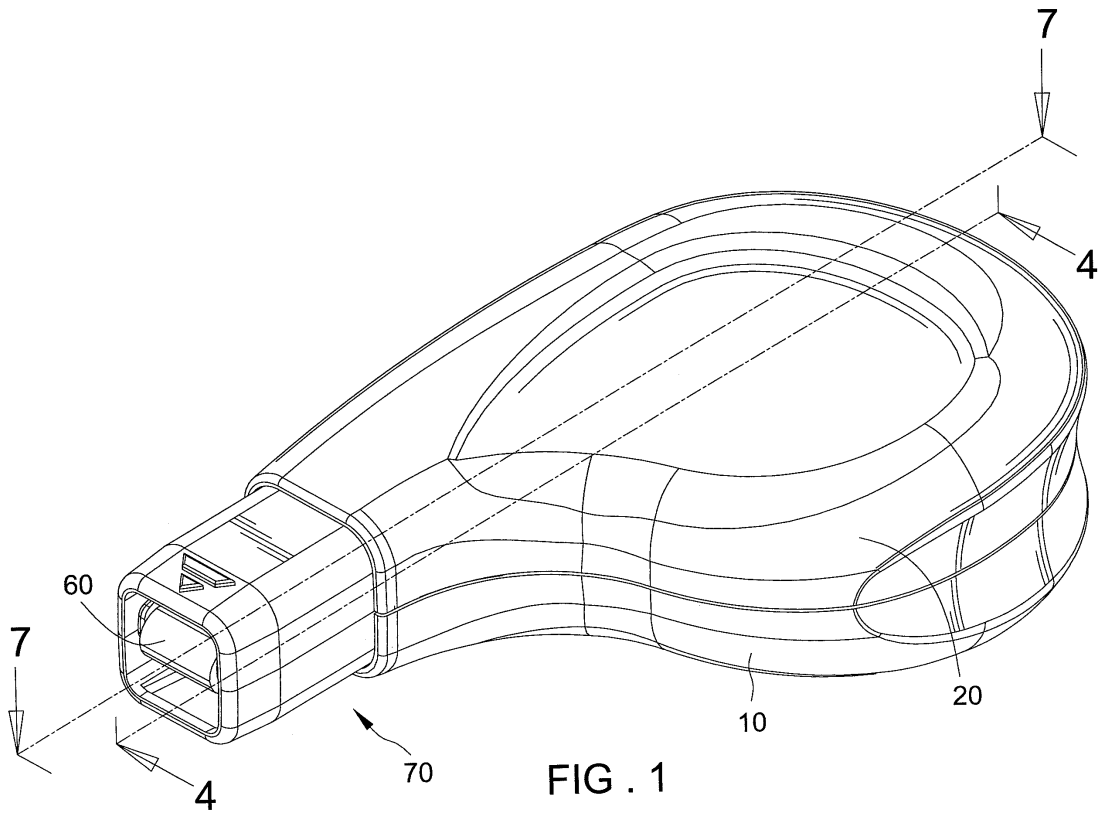

FIG . 1

EP 2 269 932 A1

Description

Background of the Invention

1. Field of the Invention

[0001] The present invention relates to a film transfer device, and in particular to a film transfer device including a slidable protection cap mounted thereon.

2. Description of the Related Art

[0002] U.S Pat. No. D,475,747 entitled "FILM-TRANSFERRING DEVICE FOR OFFICE USE" shows a casing of the film transferring device includes a cap hinged on a bottom side thereof to selectively fix with an application head which transfers film. Therefore, the cap is fixed with the application head to close the application head, and the cap is retained on the bottom of the casing as the application head transfers film.

[0003] The design of the above patent suffers from a problem that the cap wears the application head after the repeated engagement and disengagement therebetween. Consequently, the cap is not able to be securely fixed with the application head and the cap can not protect the application head. Another problem is that the cap has a section subject to fracture due to repeated bending. As a result, the cap can not protect the application head, and the fracture has an adverse effect on appearance.

[0004] The present invention is, therefore, intended to obviate or at least alleviate the problems encountered in the prior art by providing a film transfer device with a slidable protection cap which is durable and convenient for use.

Summary of the Invention

[0005] According to the present invention, a film transfer device with a slidable protection cap includes a case including a compartment and a receiving section connected with the compartment, and an opening section in proximity to the receiving section. A reel mechanism is disposed in the compartment. An application head assembly is retained in the receiving section and includes an application head exposed outside the opening sections. A protection cap is slidably mounted in the receiving section between a first position and a second position. The application head concealed by the protection cap as the protection cap is in the first position. The application head exposed from the protection cap as the protection cap is in the second position.

[0006] It is an object of the present invention that the protection cap is disposed in the case and is moveable between two positions to selectively conceal or expose the application head. Thus, the application head is protected from dust and dirt by the protection cap.

[0007] It is another object of the present invention that the protection cap exposes the application head as the protection cap is in the second position. Additionally, the protection cap has position-limiting grooves which engage with protruding sections of the application head assembly to prevent the protection cap from shaking movement, which adversely influences film-dispensing operation.

[0008] It is a further object of the present invention that the application head assembly includes a fixing frame retained in the case and is prevented from displacement. Thus, the steadiness of the fixing frame is ensured and the fixing frame is prevented from loosening and displacement in the case.

Brief Description of the Drawings

[0009]

Fig. 1 is a perspective view of a film transfer device with a slidable protection cap in accordance with the present invention.

Fig. 2 is an exploded perspective view of the film transfer device shown in Fig. 1.

Fig. 3 is another exploded perspective view of the film transfer device taken at a different angle than that of Fig. 2.

Fig. 4 is a cross-sectional view taken along line 4-4 of Fig. 1.

Fig. 5 is a cross-sectional view showing a position of the protection cap.

Fig. 6 is an extended cross-sectional view of Fig. 5 and in which the protection cap is at a position which allows exposure of an application head of the film transfer device.

Fig. 7 is a cross-sectional view taken along line 7-7 of Fig. 1.

Fig. 8 is an extended cross-sectional view of Fig. 7 and shows a position of the protection cap.

Fig. 9 is an extended cross-sectional view of Fig.8 and in which the protection cap is at a position which allows exposure of an application head of the film transfer device.

Fig. 10 shows the application head exposed and in use.

Fig. 11 is a perspective view of a film transfer device with a slidable cap in accordance with a second embodiment of the present invention.

Detailed Description of the Preferred Embodiment

[0010] While the best embodiments will be illustrated and described with reference to the drawings hereafter, numerous modifications come to mind without significantly departing from the spirit of invention, and the scope of invention is not limited by the specific embodiments.

[0011] Figs 1 through 3 show a perspective and exploded perspective views of a film transfer device with a slidable protection cap in accordance with a first embodiment of the present invention. This embodiment includes

a first case 10 and a second case 20 connected to the first case 10 and disposed opposite to the first case 10. This embodiment further includes a reel mechanism 30, an application head assembly 40 and a protection cap 70 surrounded by the first and second cases 10, 20.

[0012] The first case 10 includes a first section 11 and a second section 12, and the second case 20 includes a first section 21 and a second section 22, respectively. The first section 11 of the first case 10 forms a compartment 13 and includes a strut 14 extended from and disposed in the compartment 13. The first section 21 of the second case 20 forms a compartment 23 and includes an axle 24 extended from and disposed in the compartment 23. The reel mechanism 30 is disposed in the compartment 13 in the first case 10 and the compartment 23 in the second case 20, and the reel mechanism 30 includes a through hole 31 extending in a center thereof for insertion of the strut 14 in the first case 10, and the strut 14 is thereafter engaged with the axle 24 in the second case 20.

[0013] The second section 12 of the first case 10 includes an opening section 15, and the second section 22 of the second case 20 includes an opening section 25, respectively. The second section 12 of the first case 10 also include a first positioning section 16 and a second positioning section 17 disposed on a side of the first case 10 and in proximity to the opening section 15, and the second section 22 of the second case 20 also include a first positioning section 26 and a second positioning section 27 disposed on a side of the second case 20 and in proximity to the opening sections 25, respectively. The first positioning section 16 is disposed corresponding to the first positioning section 26 and the second positioning section 17 is disposed corresponding to the second positioning section 27. Further, a receiving section 18 is defined between the opening section 15 and the compartment 13, and correspondingly a receiving section 28 is defined between the opening section 25 and the compartment 23. Additionally, the receiving section 18 includes a stopping section 19 extended therefrom, and the receiving section 28 includes a stopping section 29 extended therefrom, respectively. The stopping sections 19 is disposed on an end opposite to the opening section 15, the stopping sections 29 is disposed on an end opposite to the opening section 25, respectively. The first and second positioning sections 16 and 17 are disposed in proximity to the receiving section 18, and the first and second positioning section 26 and 27 are disposed in proximity to the receiving section 28, respectively. Furthermore, the first case 10 includes a plurality of hooking sections 101, and the second case 20 includes a plurality of hooking sections 201 disposed corresponding to the plurality of hooking sections 101 and engaged with respective hooking sections 101 in order to fix the first and second cases 10 and 20 together. The first case 10 is disposed symmetrical to the second case 20 and the reel mechanism 30, the application head assembly 40 and the protection cap 70 are held between the first and second cases 10.

[0014] The application head assembly 40 is disposed between the first and second cases 10 and 20 and includes a fixing frame 50 and an application head 60. The fixing frame 50 includes one end retained in the receiving sections 18 and 28 of the respective first and second cases 10 and 20 and another end connected with the application head 60. The application head 60 is exposed outside the opening sections 15 and 25 of the respective first and second cases 10 and 20.

[0015] Referring further to Fig. 4, the fixing frame 50 includes a first end 51 and a second end 52 and is elongated and with resiliency. The first end 51 includes two lateral walls 511, and a first guiding wall 512 and a second guiding wall 513. The lateral walls 511 and the first and second guiding walls 512 and 513 extend in a direction substantially perpendicularly to a direction from the first end 51 to the second end 52. The first and second guiding walls 512 and 513 are disposed on an extremity of the fixing frame 50. Furthermore, the first and second guiding walls 512 and 513 are formed on two opposite sides of the fixing frame 50. Additionally, the first and second guiding walls 512 and 513 are adapted to guide film from the reel mechanism 30 through a 90-degree rotation. The fixing frame 50 also includes two lateral sides and each lateral side includes a protruding section 514 extended therefrom and disposed in proximity to one lateral wall 511. Furthermore, the first end 51 of the fixing frame 50 is disposed in the receiving sections 18 and 28 of the respective first and second cases 10 and 20. Each lateral wall 511 has one end stopped on the stopping section 19 and another end stopped on the stopping section 29 such that the fixing frame 50 is retained between the first and second cases 10 and 20 and is prevented from displacement. Thus, the steadiness of the fixing frame 50 is ensured and the fixing frame 50 is prevented from loosening and displacement in the first and second cases 10 and 20. Furthermore, the application head 60 is pivotally mounted on the second end 52 of the fixing frame 50, and the application head 60 extends outward of the fixing frame 50 and is adapted to abut against on an item to be worked with. Because the application head 60 is made from a material which has resiliency, it is convenient to enable film to stick on a surface of the item. In this preferred embodiment, the application head 60 is configured as a roller. Additionally, the application head 60 is adapted to enable film to apply on the surface of the item.

[0016] The protection cap 70 is insertably mounted on the application head assembly 40, and is configured of a body 71 and two clipping legs 72. The body 71 includes a channel 711 extending axially through two ends thereof. The clipping legs 72 are extended from two lateral surfaces of the body 71, respectively, and in the same direction. Each clipping leg 71 also has a through slot 73 extended axially, and the through slot 73 enables the clipping leg 71 have bending resiliency. The body 71 further includes two position-limiting grooves 712 extended on the two lateral surface, respectively, and each posi-

tion-limiting groove 712 is disposed corresponding to one through slot 73. The position-limiting grooves 712 receive two protruding sections 514 respectively so as to prevent the protection cap 70 from shaking movement. Each clipping leg 72 further includes an engaging section 721 extended from an end thereof and selectively positioned on the first positioning sections 16 and 26 and on the second positioning sections 17 and 27, of the respective first and second cases 10 and 20.

[0017] Figs. 4 through 6 show that the protection cap 70 insertably mounted on the application head assembly 40. The protection cap 70 is moveable relative to the first and second cases 10 and 20. Specifically, the engaging sections 721 is adapted to be positioned on the first positioning sections 16 and 26 and on the second positioning sections 17 and 27, of the respective first and second cases 10 and 20, and such that the protection cap 70 is moveable between the two positions to selectively conceal the application head 60 or expose the application head 60. When the protection cap 70 in a first position, the application head 60 is concealed by the protection cap 70, and the clipping legs 72 engaged in the first and second cases 10 and 20 prevent the protection cap 70 disengaged from the first and second cases 10 and 20, and the engaging sections 721 are positioned on the first positioning sections 16 and 26. Furthermore, when the protection cap 70 is in a second position, the clipping legs 72 are engaged in the first and second cases 10 and 20, and the engaging sections 721 are positioned on the second positioning sections 17 and 27.

[0018] Figs. 7 through 9 show that the application head 60 concealed by the protection cap 70 when the protection cap is in the first position. Thus, the application head 60 is protected from dust or dirt. Furthermore, when the protection cap 70 is in the second position, the protection cap 70 exposes the application head 60, and the application head 60 is in the in-use position to transfer film. Additionally, the position-limiting grooves 712 of the protection cap 70 which engage with the protruding sections 514 prevent the protection cap 70 from shaking movement, which adversely influences film-dispensing operation.

[0019] Fig. 10 shows that the protection cap 70 in the second position. In use of the application head 60, the protection cap 70 is moved to the second position. The application head 60 is thereafter positioned on a surface of an item to be worked with. Thus, user can ensure that film is transferred on the surface.

[0020] Fig. 11 shows a perspective view of a film transfer device with a slidable protection cap in accordance with a second embodiment of the present invention. The second embodiment is similar to the first embodiment except that it includes an application head 60a including a flat head. Likewise, the protection cap 70 is moveable between two positions, and the protection cap 70 conceals the application head 60a when in a first position, and the protection cap 70 exposes the application head 60a when in a second position. The protection cap 70 can also protect the application head 60a from dust or dirt.

[0021] In view of forgoing, the film transfer device which has a slidable protection cap of the present invention includes a case, i.e. a first case 10 and a second case 20, a reel mechanism 30, an application head assembly 40, and a protection cap 70. The application head assembly 40 is retained in receiving sections 18, 28 of the respective first and second cases 10 and 20. Additionally, the application head assembly 40 includes an application head 60, 60a exposed outside opening sections 15 and 25 of the respective first and second cases 10 and 20. The protection cap 70 is disposed between the first and second cases 10 and 20 and is moveable between two positions. The protection cap 70 conceals the application head 60a when in a first position, and the protection cap 70 exposes the application head 60a when in a second position. Thus, the application head 60 is in the in-use position to transfer film.

[0022] In view of forgoing, the protection cap 70 is disposed between the first and second cases 10 and 20 and is moveable between two positions to selectively conceal or expose the application head 60, 60a. Thus, the application head 60, 60a is protected from dust and dirt by the protection cap 70.

[0023] Furthermore, the protection cap 70 exposes the application head 60 as the protection cap 70 is in the second position. Additionally, the position-limiting grooves 712 of the protection cap 70 which engage with the protruding sections 514 prevent the protection cap 70 from shaking movement, which adversely influences film-dispensing operation.

[0024] Moreover, the fixing frame 50 is retained between the first and second cases 10 and 20 and is prevented from displacement. Thus, the steadiness of the fixing frame 50 is ensured and the fixing frame 50 is prevented from loosening and displacement in the first and second cases 10 and 20.

[0025] While the specific embodiments have been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of invention and the scope of invention is only limited by the scope of accompanying claims.

Claims

1. A film transfer device with a slidable protection cap comprising:

   a case (10, 20), including a compartment (13, 23) and a receiving section (18,28) connected with the compartment, and an opening section (15, 25) in proximity to the receiving section;
   a reel mechanism (30) disposed in the compartment;
   an application head assembly (40) retained in the receiving section and including an applica-

tion head (60, 60a), with the application head exposed outside the opening section; and
a protection cap (70) slidably mounted in the receiving section between a first position and a second position, with the application head concealed by the protection cap as the protection cap is in the first position, and with the application head exposed from the protection cap as the protection cap is in the second position.

2. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the case (10, 20) includes a first positioning section (16, 26) and a second positioning section (17, 27) disposed in proximity to the receiving section (18, 28), and wherein the protection cap (70) includes an engaging section (721) selectively positioned on the first positioning section and on the second positioning section.

3. The film transfer device with the slidable protection cap as claimed in claim 2 wherein the protection cap (70) includes a body (71) and at least one clipping leg (72), with the at least one clipping leg abutting against the case (10, 20).

4. The film transfer device with the slidable protection cap as claimed in claim 3 wherein the protection cap (70) includes two clipping legs (72).

5. The film transfer device with the slidable protection cap as claimed in claim 3 wherein the protection cap (70) includes two engaging sections (721) extended from two opposite sides thereof respectively, with the engaging sections disposed on the clipping leg (72).

6. The film transfer device with the slidable protection cap as claimed in claim 4 wherein each of the two clipping legs (72) includes a through slot (73) extended axially, and with the through slot enabling the respective clipping leg have bending resiliency.

7. The film transfer device with the slidable protection cap as claimed in claim 1 or 4 wherein the application head assembly (40) includes a fixing frame (50) having a first end (51) and a second end (52), with the first end retained in the receiving section (18, 28), and with the second end connected with the application head (60, 60a), and wherein the protection cap (70) is insertably mounted on the fixing frame.

8. The film transfer device with the slidable protection cap as claimed in claim 7 wherein the first end (51) of the fixing frame (50) includes two lateral walls (511), and wherein the receiving section (18, 28) include a stopping section (19, 29) disposed corresponding to one of the two lateral walls, and wherein the two lateral walls are stopped on the respective stopping section.

9. The film transfer device with the slidable protection cap as claimed in claim 8 wherein the first end (51) of the fixing frame (50) includes a first guiding wall (512) and a second guiding wall (513), with the first and second guiding walls disposed on an extremity of the fixing frame, and with the first and second guiding walls adapted to guide film from the reel mechanism (30) through a rotation.

10. The film transfer device with the slidable protection cap as claimed in claim 8 wherein the fixing frame (50) includes two lateral sides and each lateral side includes a protruding section (514) extended therefrom and disposed in proximity to one lateral wall (511), and wherein the protection cap (70) includes two lateral surface and two position-limiting grooves (712) extended thereon, and wherein the protruding sections are received in the position-limiting grooves respectively.

11. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the application head (60) is configured as a roller.

12. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the application head (60a) includes a flat head.

13. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the case (10, 20) includes a first case (10) and a second case (20), with the first case disposed symmetrical to and connected with the second case.

Amended claims in accordance with Rule 137(2) EPC.

1. A film transfer device with a slidable protection cap comprising:

a case (10, 20), including a compartment (13, 23), a receiving section (18, 28) connected with the compartment, an opening section (15, 25) in proximity to the receiving section, and first and second positioning sections (16, 26; 17, 27) disposed in proximity to the receiving section (18, 28);
a reel mechanism (30) disposed in the compartment;
an application head assembly (40) retained in the receiving section and including a fixing frame (50) having a first end (51) and a second end (52), and an application head (60, 60a), with the application head exposed outside the opening section, with the first end retained in the receiv-

ing section (18, 28) and including first and second guiding walls (512; 513) disposed on an extremity of the fixing frame, with the first and second guiding walls adapted to guide film from the reel mechanism (30) through a rotation, and with the second end connected with the application head (60, 60a); and

a protection cap (70) insertably mounted on the fixing frame, and slidably mounted in the receiving section between a first position and a second position, and including two engaging sections (721) selectively positioned on the first and second positioning sections, with the protection cap (70) further including a body (71), and two clipping legs (72) of which each abuts against the case (10, 20), with the two engaging sections (721) disposed on the two clipping legs (72) respectively and extended from two opposite sides of the protection cap (70) respectively, with the application head concealed by the protection cap as the protection cap is in the first position, and with the application head exposed from the protection cap as the protection cap is in the second position.

2. The film transfer device with the slidable protection cap as claimed in claim 1 wherein each of the two clipping legs (72) includes a through slot (73) extended axially, and with the through slot enabling the respective clipping leg have bending resiliency.

3. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the first end (51) of the fixing frame (50) includes two lateral walls (511), and wherein the receiving section (18, 28) include a stopping section (19, 29) disposed corresponding to one of the two lateral walls, and wherein the two lateral walls are stopped on the respective stopping section.

4. The film transfer device with the slidable protection cap as claimed in claim 3 wherein the fixing frame (50) includes two lateral sides and each lateral side includes a protruding section (514) extended therefrom and disposed in proximity to one lateral wall (511), and wherein the protection cap (70) includes two lateral surface and two position-limiting grooves (712) extended thereon, and wherein the protruding sections are received in the position-limiting grooves respectively.

5. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the application head (60) is configured as a roller.

6. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the application head (60a) includes a flat head.

7. The film transfer device with the slidable protection cap as claimed in claim 1 wherein the case (10, 20) includes a first case (10) and a second case (20), with the first case disposed symmetrical to and connected with the second case.

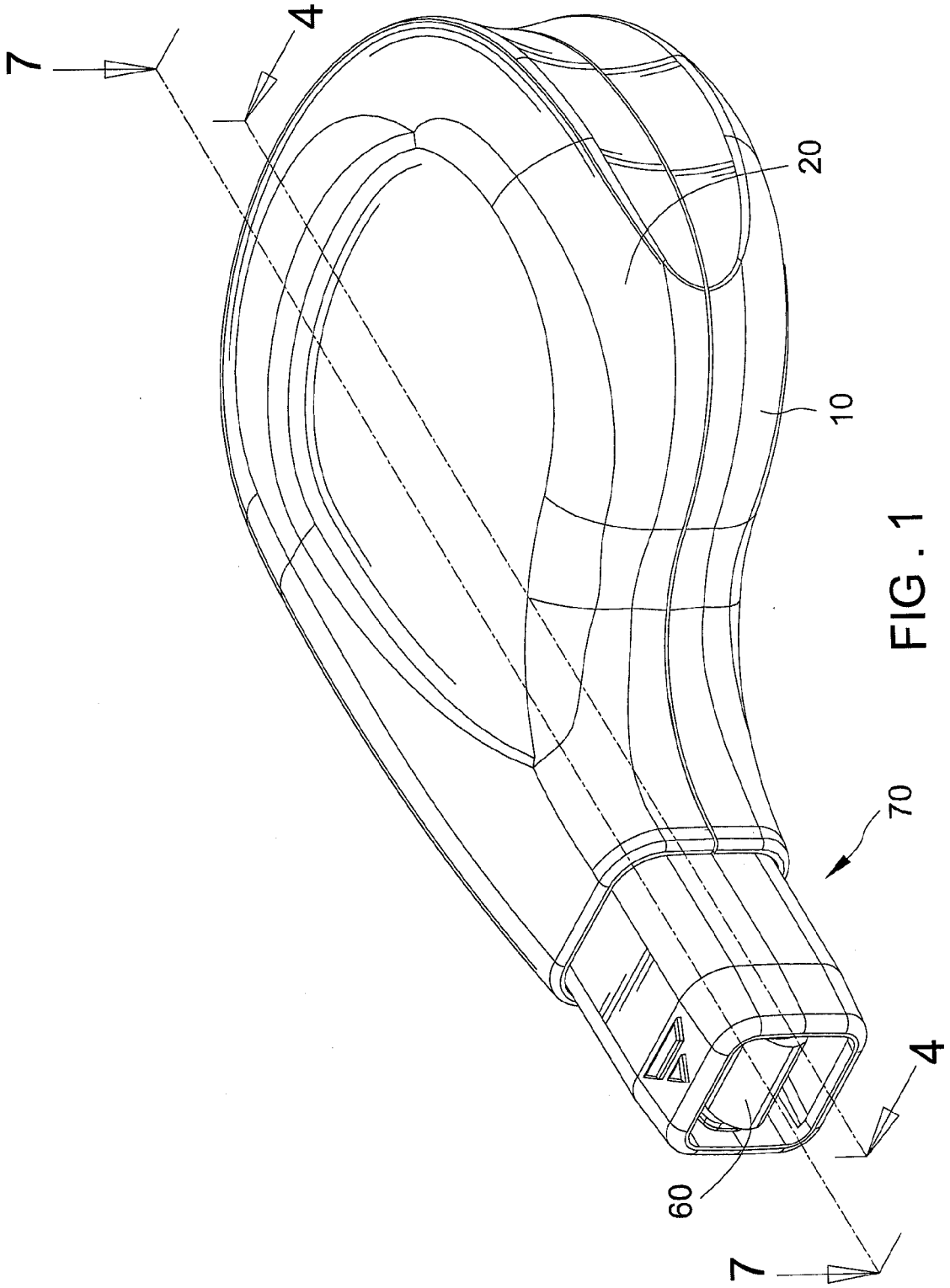

FIG. 1

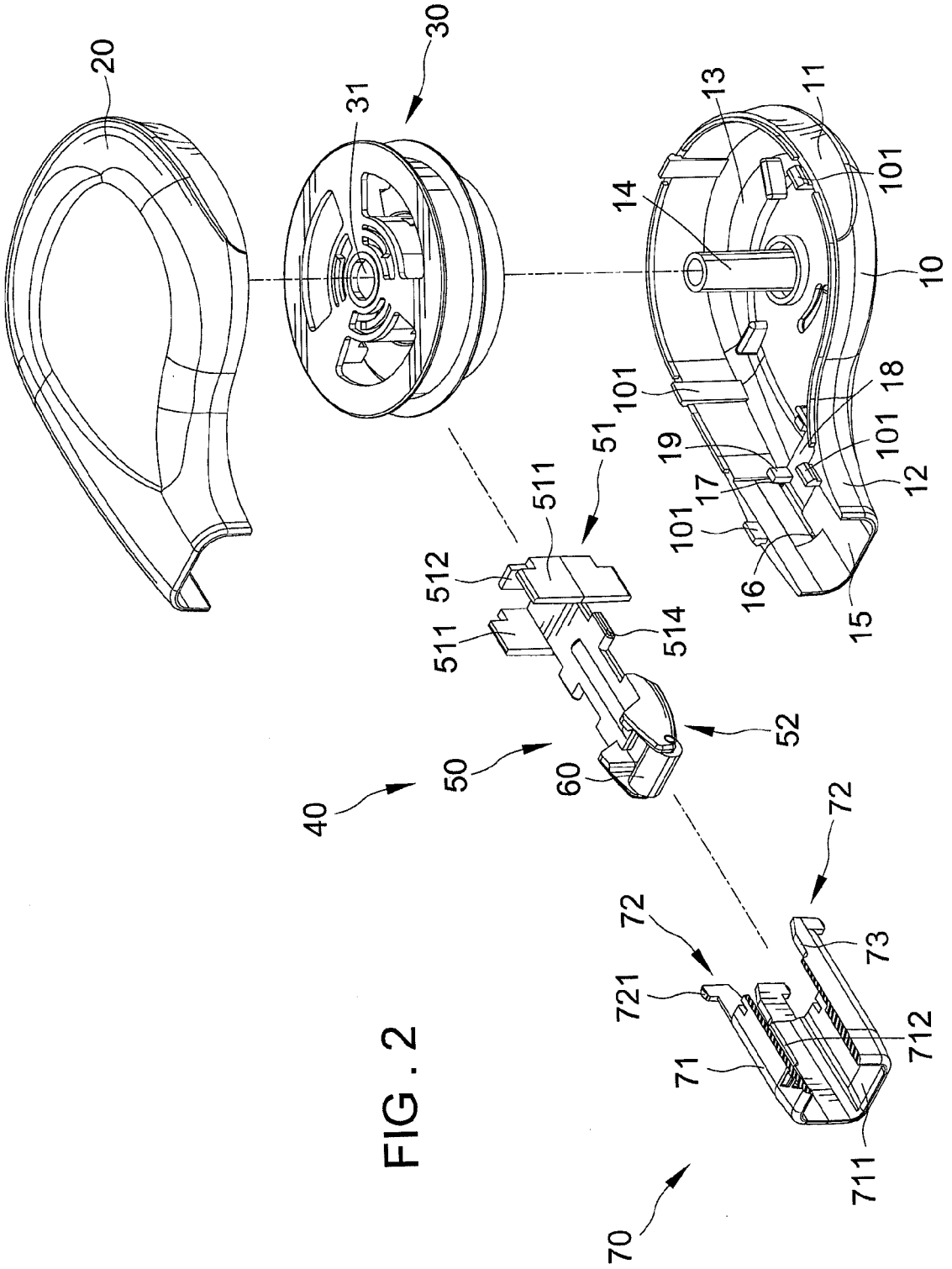
20
30
31
13
11
14
101
10
101
18
19
101
17
12
101
16
15
51
511
512
511
514
52
40
50
60
72
72
73
721
712
71
711
70

FIG. 2

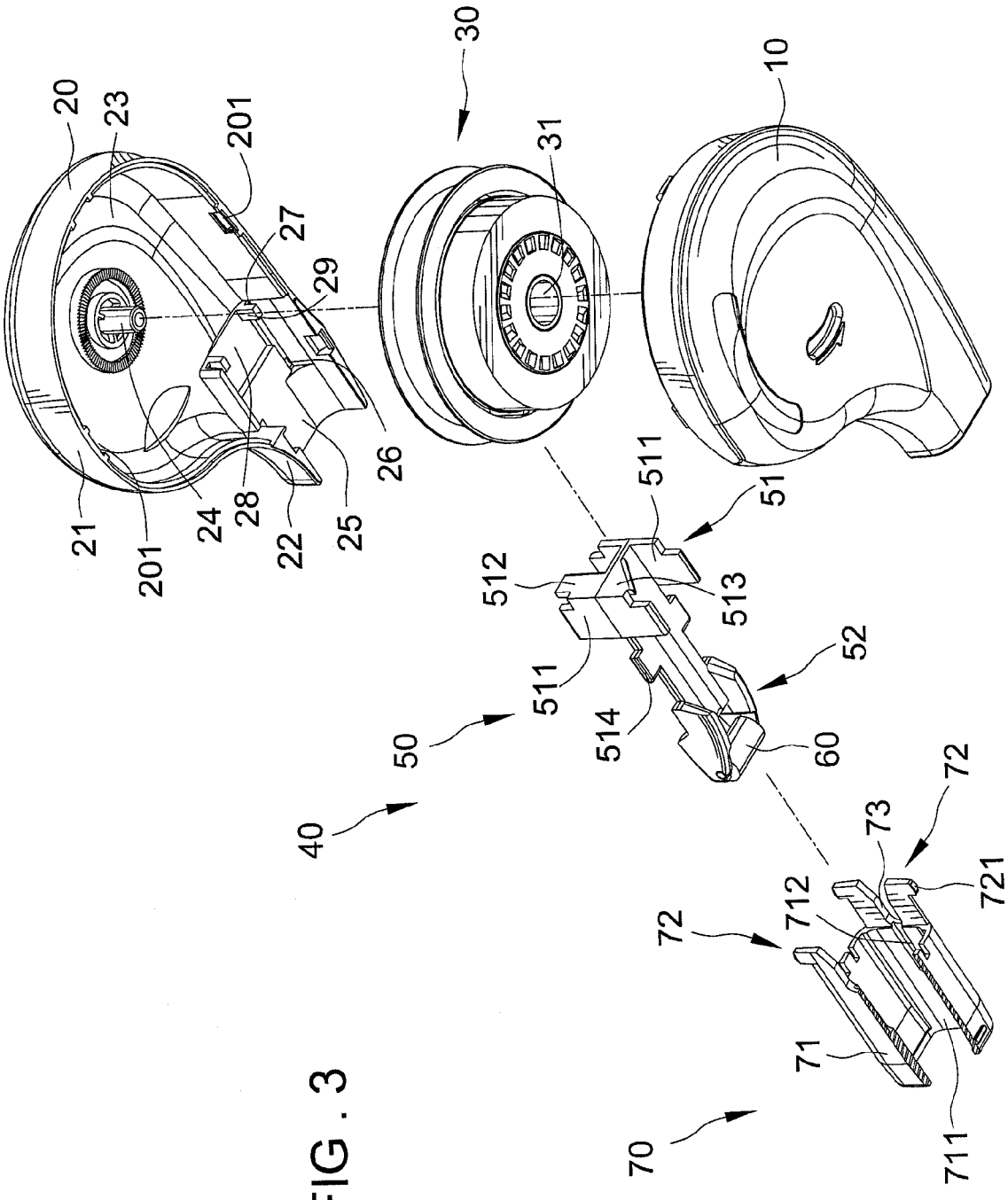
20
23
201
27
29
30
31
10
21
201
24
28
22
25
26
511
51
512
513
511
52
50
514
60
40
72
73
721
712
72
71
711
70

FIG. 3

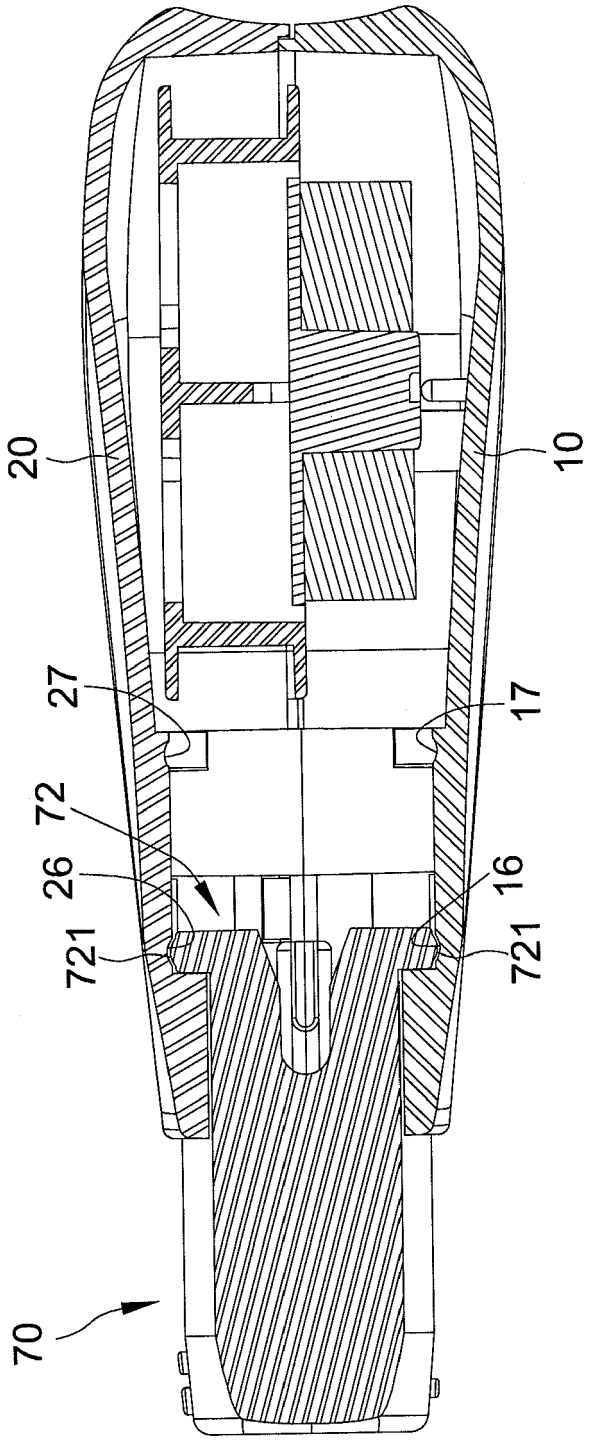

FIG. 4

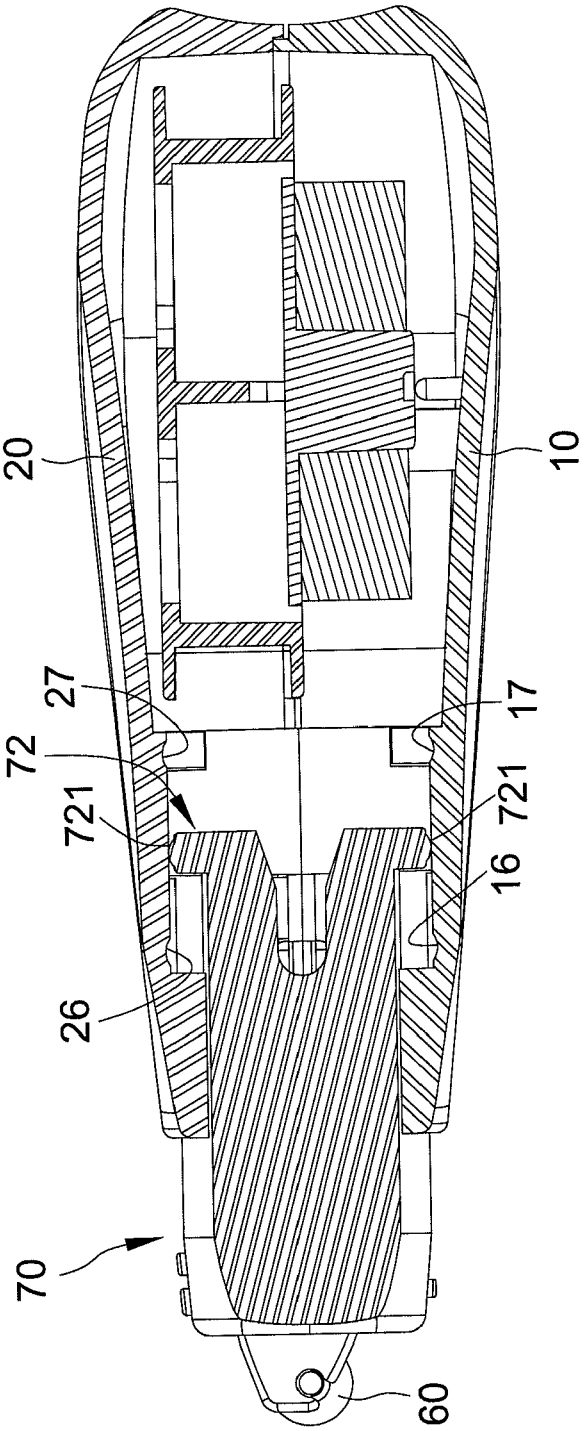

FIG. 5

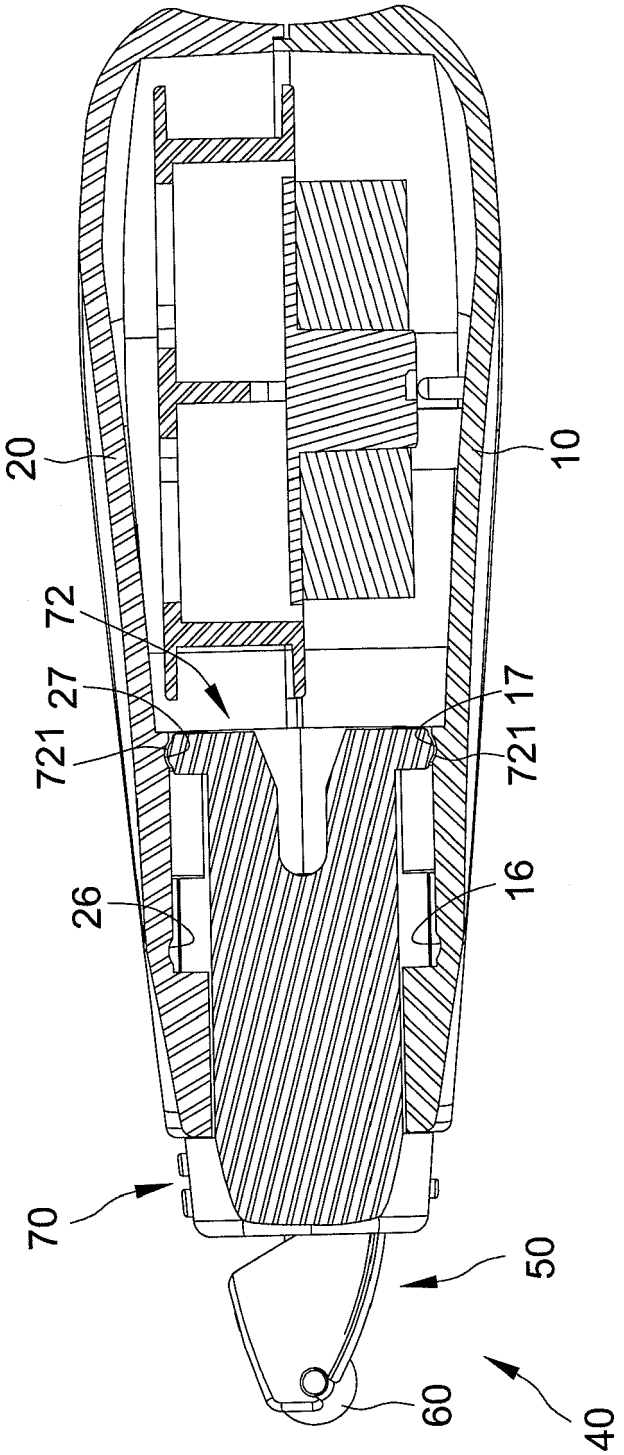

FIG. 6

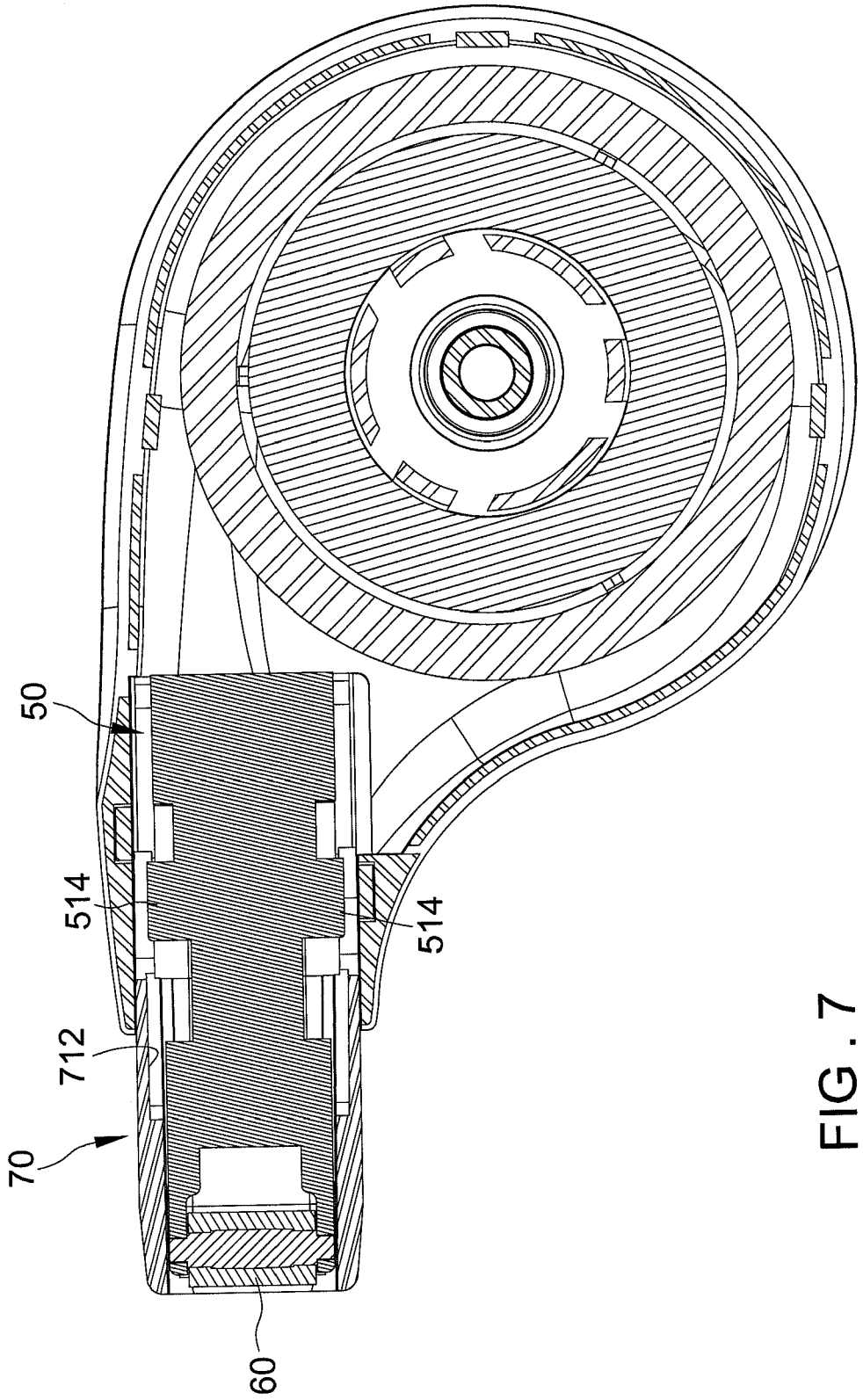

FIG. 7

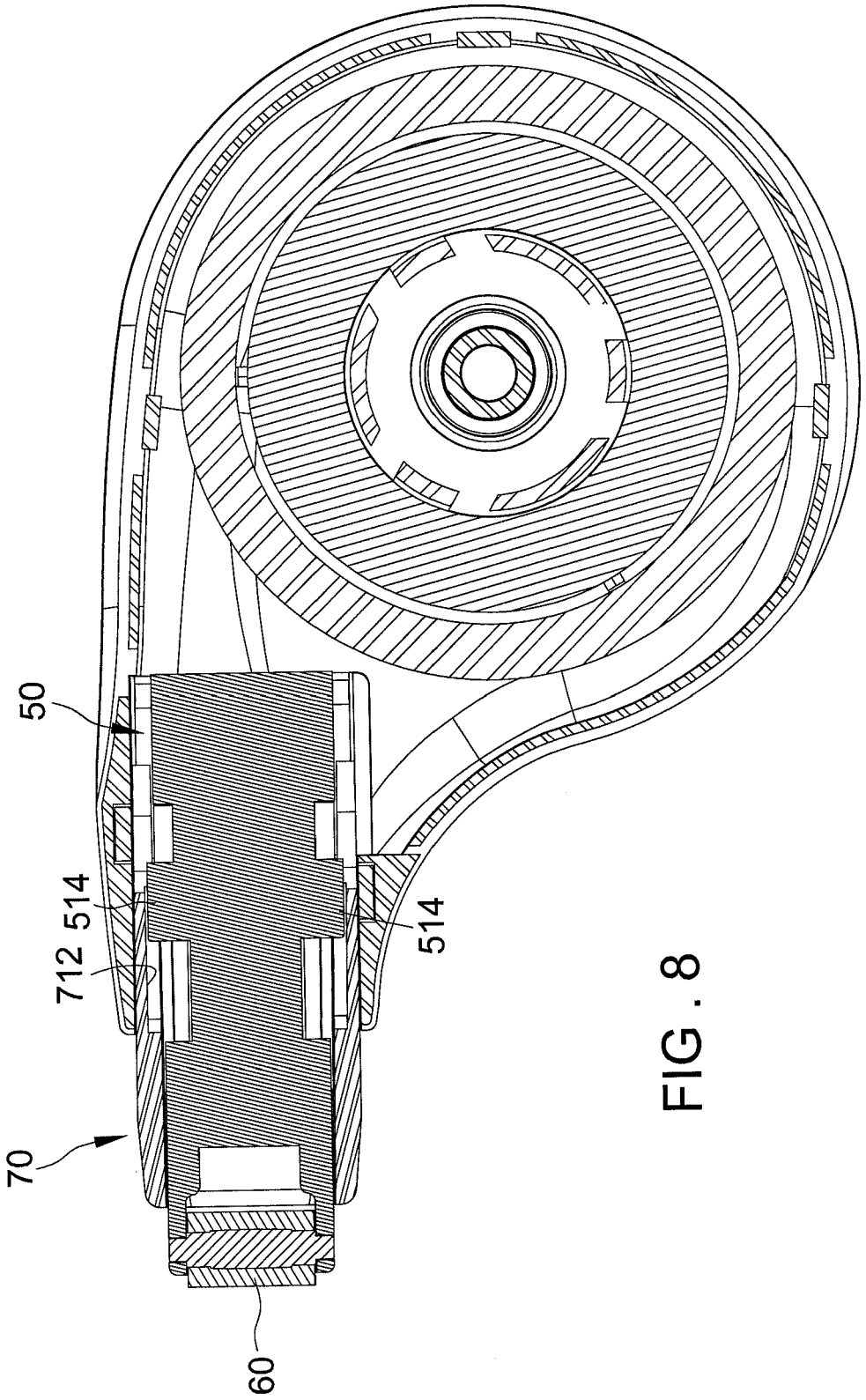

FIG. 8

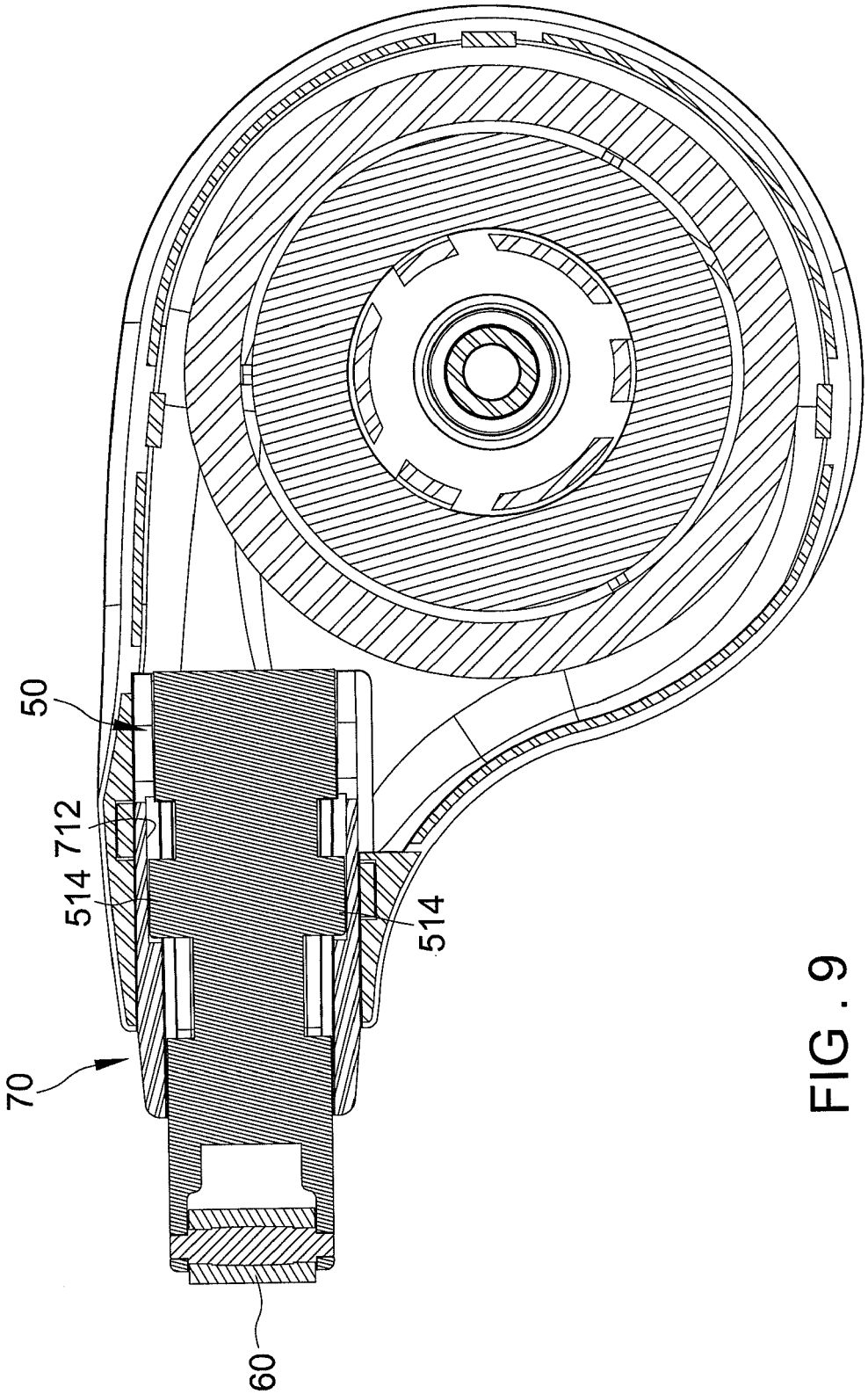

FIG. 9

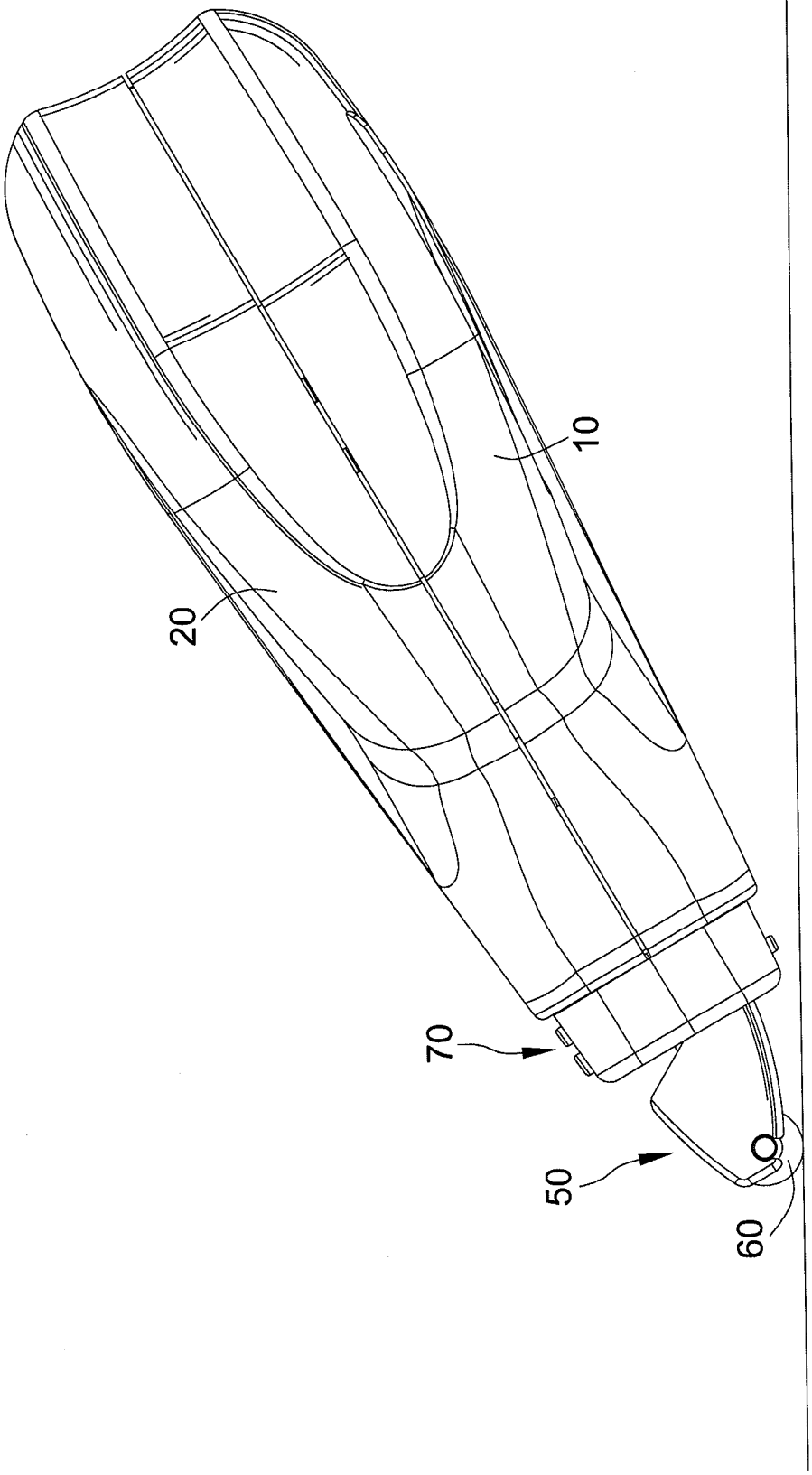

FIG. 10

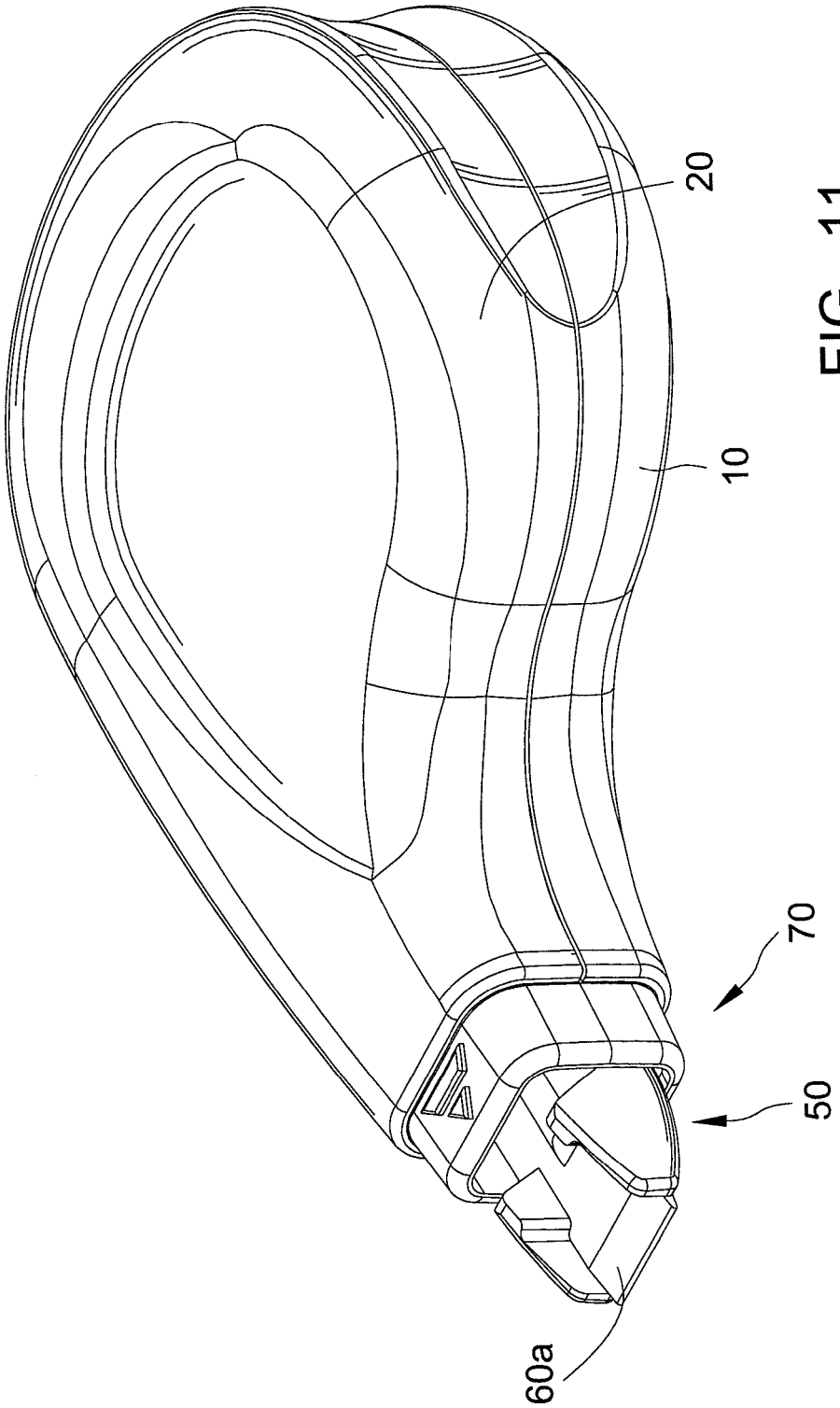

FIG. 11

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 09 16 4391

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y A	JP 10 119488 A (PLUS KOGYO KK) 12 May 1998 (1998-05-12) * abstract * -----	1,7, 12-13 11 2-6,8-10	INV. B65H37/00
X	US 5 679 156 A (MATSUMARU RYOJI [JP]) 21 October 1997 (1997-10-21) * column 3, line 66 - column 4, line 67 * * column 6, lines 13-32; figures 1,2 * -----	1-5, 12-13	
X	JP 2005 001850 A (TOMBOW PENCIL) 6 January 2005 (2005-01-06) * abstract * -----	1,12-13	
Y	US 2007/193694 A1 (SIMMELSGAARD PETER A [DK] ET AL) 23 August 2007 (2007-08-23) * the whole document * -----	11	
			TECHNICAL FIELDS SEARCHED (IPC) B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 December 2009	Raven, Peter

CATEGORY OF CITED DOCUMENTS

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

1 EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 16 4391

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-12-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 10119488 A	12-05-1998	JP 3782527 B2	07-06-2006
US 5679156 A	21-10-1997	CN 1138530 A	25-12-1996
		DE 19611440 A1	02-10-1996
		JP 2869855 B2	10-03-1999
		JP 8267992 A	15-10-1996
JP 2005001850 A	06-01-2005	NONE	
US 2007193694 A1	23-08-2007	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82