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(54) **Scraper device for removal of films**

(57) Provided herein is a scraper device (1) for removal of scrapable films comprising an outer casing (2), which can be gripped manually and houses a substantially cylindrical scraper element (3), that can turn about its own axis (8a), a motor (4), designed to turn said scraper element (3), and cleaning means (6), designed to clean said scraper element (3).

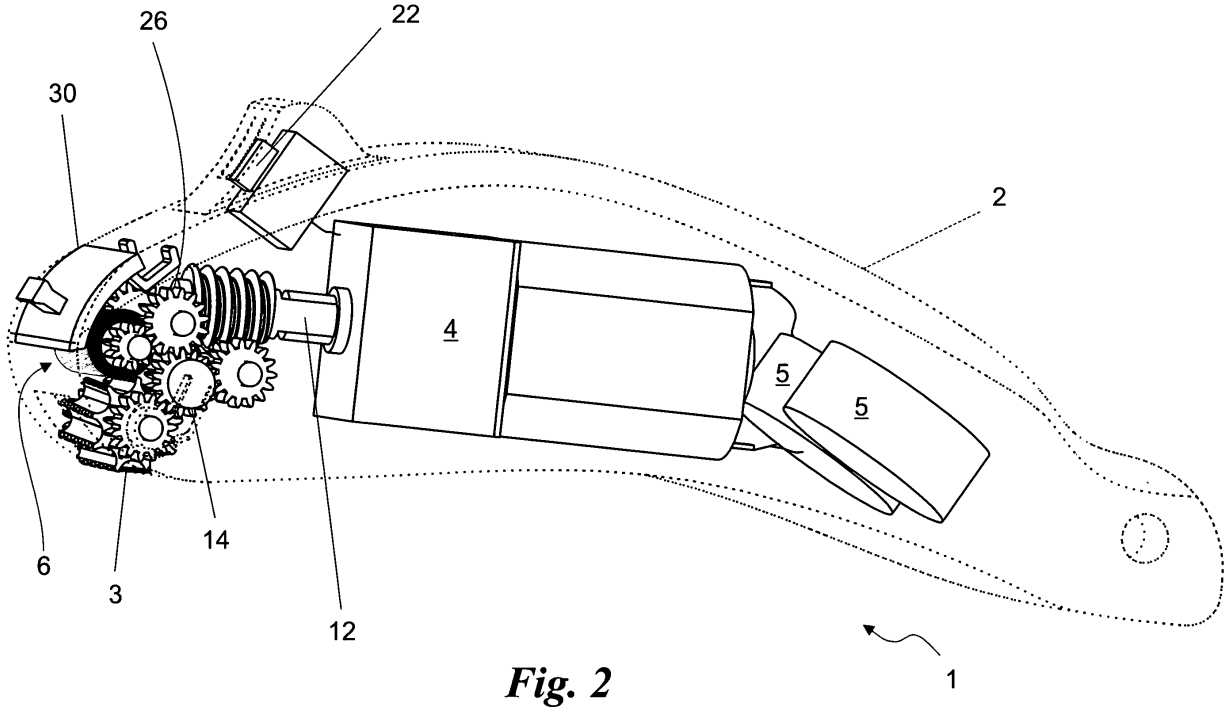

Fig. 2

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Description

[0001] The subject of the present invention is a scraper device for removal of films, of the type specified in the preamble of the first claim.

[0002] Currently known are scrapable films designed to hide a surface and in particular a graphic element, in particular a wording or drawing, appearing on the same surface.

[0003] Said films are used in particular for tickets and cards that present a datum that is to be rendered visible only after purchase thereof.

[0004] In particular, these are scrapable films used in instantaneous lottery tickets, for coating the graphic signs that present the result of the instantaneous lottery, or else used for coating cards that present a numeric code that can be used for recharging one's own telephone subscription, or for cards for paying parking spaces or the like.

[0005] Said films provide the assurance that the graphic signs cannot be seen if the films are not removed. It is not in fact possible to remove and then replace the same film, since the latter crumbles into a dust when it is removed.

[0006] The known art referred to above presents some important drawbacks.

[0007] In fact, said films are inconvenient to scrape if one is not provided with a scraper element, such as for example a coin, and a resting surface.

[0008] Furthermore, the dust produced by crumbling of the film is sticky and can stick to clothes and hands. In fact, each particle of dust comprises a gluey portion that keeps it stuck to the coated surface before the film is removed.

[0009] To overcome the drawbacks referred to, devices that comprise scraper elements that are moved automatically have been created.

[0010] However, these do not exert an effective scraping action, if they are not used on a resting surface, and moreover do not solve the problem of diffusion of the dust completely.

[0011] The devices of a known type are then inconvenient to transport and hence not usually available when required.

[0012] In this situation, the technical task underlying the present invention is to devise a scraper device for removal of films that will be able to overcome substantially the drawbacks referred to.

[0013] In the field of said technical task, an important purpose of the invention is to obtain a scraper device for removal of scrapable films that will enable said films to be scraped even in the absence of a resting surface.

[0014] Another important purpose of the invention is to provide a scraper device for removal of scrapable films that will enable the problem of diffusion of the dust produced by crumbling of said films to be overcome.

[0015] A further purpose of the invention is to obtain a scraper device for removal of films that is simple and can be put in one's pocket.

[0016] The technical task and the purposes specified are achieved by a scraper device for removal of films as claimed in the annexed Claim 1.

[0017] Preferred embodiments are highlighted in the subclaims.

[0018] The characteristics and advantages of the invention are clarified hereinafter by the detailed description of a preferred embodiment of the invention, with reference to the attached drawings, in which:

Figure 1 shows a scraper device according to the invention in axonometric view;
Figure 2 represents the internal part of the scraper device illustrated in Figure 1;
Figure 3 highlights a side view of the inside of a scraper device according to the invention;
Figure 4 is a top plan view of the inside of a scraper device according to the invention;
Figure 5 is a side view of an internal portion of the scraper device according to the invention;
Figure 6 illustrates a view from beneath of the internal portion of Figure 5; and
Figure 7 illustrates a detail in axonometric view of the device according to the invention.

[0019] With reference to the figures referred to above, the scraper device according to the invention is designated as a whole by the number **1.**

[0020] The scraper device 1 is designed to remove scrapable films from surfaces, in particular from surfaces of instantaneous lottery tickets, of telephone recharging cards, of cards for pay carparks, and others still.

[0021] The scraper device 1 comprises, broadly speaking, a outer casing **2** housing a substantially cylindrical scraper element **3,** which can turn about its own axis, a motor **4,** designed to turn the scraper element 3, batteries **5** for supplying the motor 4, and cleaning means **6** designed to clean the scraper element 3.

[0022] In particular, the outer casing 2 can be gripped manually and has a shape that, in side view, approximates a parallelepiped having a side face constituted by a plane arched figure, and, in top plan view, having a section that widens and immediately afterwards narrows at one end, as illustrated in Figures 1 - 4.

[0023] The outer casing 2 is preferably made of polymeric material and has dimensions comprised in the order of magnitude of centimetres. It is thus transportable manually. The outer casing 2 then comprises a hole **7** for fixing a ring so that the same scraper device 1 can be used as key holder or be associated to a key holder.

[0024] The scraper element 3, instead, is a cylindrical element preferably made of metal or of a high-density polymer, associated to a spindle **8** defining an axis of rotation **8a** coinciding with the axis of the scraper element 3.

[0025] The latter is basically a cylindrical milling element and comprises a plurality of arms **9** diametrally com-

ing out of the scraper element 3, preferably parallel to one another and having a direction that is skew with respect to the direction of the axis of rotation 8a.

[0026] The arms 9 comprise superficially a plurality of teeth 10 designed to scrape surfaces in the direction of rotation **8b.**

[0027] The scraper element 3 is illustrated in detail in Figure 7.

[0028] It is set in the front and bottom portion of the outer casing 2 so that some teeth **10** of some arms 9 come out of the same outer casing 2 through a purposely provided window **11.**

[0029] The scraper element 3 is finally connected to the outer casing 2 appropriately by means of purposely provided seats made on the latter, designed to house the spindle 8. The latter are preferably made on flexible portions **13** of the outer casing 2.

[0030] Said flexible portions 13 cause, if the force of pressure of the scraper element 3 on the surface is too high, the same scraper element 3 to translate or move so as to prevent the surface, in particular if it is paper, from being ruined.

[0031] The motor 4 is preferably constituted by a rotational electric motor equipped with a rotation shaft **12,** appropriately having an axis **12a** perpendicular to the axis of rotation 8a of the scraper element 3.

[0032] The motor **4** is connected to the electric-power supply batteries 5 and can be activated via control means **22,** constituted for example by a push-button, set on of a projecting portion **23** and designed to be pressed with the index finger.

[0033] The motor 4 is then connected to the scraper element 3 by means of first connection members **14.**

[0034] The latter are illustrated in detail in Figures 5 and 6.

[0035] They comprise in particular a wormscrew **15** fixed with respect to the rotation shaft 12 and concentric therewith.

[0036] The wormscrew 15 is connected to a first circular gear **16,** set along a first shaft **17** substantially parallel to the spindle 8 and is also constrained on purposely provided housings made on the walls of the outer casing 2.

[0037] The first circular gear 16 is designed to mesh with the wormscrew 15 and to turn in a direction perpendicular to the latter only when said wormscrew 15 is driven by the motor 4. It is in fact advantageously envisaged that the coupling between the wormscrew and the first circular gear 16 is of an irreversible type.

[0038] Two first gears **18** are moreover constrained to the first shaft 17.

[0039] Said gears **18** are connected to two second gears **19,** constrained to a second shaft **20,** parallel to the first shaft 17.

[0040] In turn, also the second gears 19 are connected to third gears **21,** set along the spindle 8 and hence fixed with respect to the scraper element 3.

[0041] The rotation of the third gears 21 is thus connected to the rotation of the scraper element 3.

[0042] The cleaning means 6 preferably comprise, instead, a cylindrical brush **24.**

[0043] The cylindrical brush 24 is preferably parallel and aligned to the scraper element 3 and has a length substantially equal to the latter. It comprises bristles, or various cleaning elements, which interfere with the scraper element so as to clean the latter.

[0044] The cylindrical brush 24 is also moved by the motor 4, preferably in the direction of rotation opposite to that of the scraper element 3 and with a higher tangential speed. As an alternative, it can be moved in the same direction of rotation as that of the scraper element 3 and with an identical or higher tangential speed.

[0045] The cylindrical brush 24 is then fixed with respect to a third shaft **25,** which is also constrained on purposely provided housings made on the walls of the outer casing 2.

[0046] The brush is connected to the motor 4 by means of second connection members **26,** in part coinciding with the first connection members 14.

[0047] They comprise two driving gears 27, connected to the third shaft 25 and thus to the rotation of the cylindrical brush 24, and two fourth gears **28,** constrained to a fourth shaft **29,** parallel to the first shaft 17.

[0048] The fourth gears 28 are connected both to the driving gears 27 and to the second gears 19, which are in turn connected to the rotation of the motor 4.

[0049] All the gears described preferably have one and the same diameter except for the driving gears 27 that has a smaller diameter so that the cylindrical brush 24 will have a higher tangential speed than the scraper element 3.

[0050] The cleaning means 6 moreover preferably comprise a container **31** for collecting the dust scraped by the cylindrical brush 24. Said container 31, illustrated in Figure 3, can be inserted between the cylindrical brush 24 and the scraper element 3 and is preferably constituted by a portion of the outer casing 2.

[0051] Finally, the cleaning means 6 are accessible from a hatch **30,** which can be opened by hand in order to enable emptying of the dust scraped by the cylindrical brush 24 or in the collection container 31.

[0052] Operation of the scraper device 1, described above in a structural sense, is described in what follows.

[0053] The scraping device is set in the proximity of a surface comprising a scrapable film.

[0054] In particular, the scraper element 3 is set in a position corresponding to the scrapable film, and the device 1 is activated with the control means 22.

[0055] Consequently, the scraper element 3 turns, removing the scrapable film. At the same time, the scraper element 3 is cleaned by the cylindrical brush 24.

[0056] Furthermore, the elasticity of the flexible portions 13 achieves the right force of abrasion for removing the film without damaging the surface, which is generally made of paper material and silk-screen treated or printed.

[0057] The sticky dust, deriving from crumbling of the

scrapable film, is hence not diffused outside the device 1.

[0058] At the end of operation, the cylindrical brush 24 can be cleaned to eliminate the dust through the hatch 30 or the collection container 31 can be emptied out.

[0059] The invention enables important advantages to be achieved.

[0060] In fact, the scraper device 1 enables scraping of the films even in the absence of a resting surface, on account of the efficiency of the scraper element 3, which is capable of operating even if it is not driven by the electric motor 4.

[0061] In fact, the provision of a scraper element 3 structured as a milling element with cutting teeth 10, and the wormscrew control 15 of an irreversible type prevent movements of the scraper element 3 when the motor 4 is not active. The teeth 10 of the scraper element 3 can consequently still operate as elements able to scrape, and in this sense the movements of the hand that holds the device 1 or the film are sufficient, when a resting surface is not available.

[0062] Furthermore, as mentioned previously, the sticky dust, deriving from crumbling of the scrapable film, is not diffused outside the device 1. It is moreover separated from the scraper element 3 by means of the cylindrical brush 24. Proper operation of said scraper element 3 is thus guaranteed.

[0063] A further advantage of the device 1 is represented by the fact that the scraper device 1 is simple, has reduced dimensions and is hence transportable together with the keys or the like.

[0064] The invention may undergo variations, all of which fall within the scope of the inventive idea.

Claims

1. A scraper device (1) for removal of scrapable films, comprising an outer casing (2) that can be gripped manually and houses a substantially cylindrical scraper element (3), which can turn about its own axis (8a), and a motor (4), designed to turn said scraper element (3), said device being **characterized in that** it comprises cleaning means (6) designed to clean said scraper element (3).

2. The device according to Claim 1, in which said cleaning means (3) are constituted by a rotating cylindrical brush (24).

3. The device according to Claim 2, in which said rotating cylindrical brush (24) is activated by said motor (4).

4. The device according to one or more of the preceding claims, in which said scraper element (3) comprises a plurality of rigid arms (9), diametrally coming out of the surface of said scraper element (3) and comprising on the surface a plurality of teeth (10) designed to scrape scrapable surfaces.

5. The device according to Claim 4, in which said arms (9) are parallel to one another and have a direction that is skew with respect to the direction of said axis of rotation (8a).

6. The device according to Claim 4 or Claim 5, in which said teeth (10) are oriented according to a direction of rotation (8a).

7. The device according to one or more of Claims 4 to 6, in which said scraper element (3) is made of metal.

8. The device according to one or more of the preceding claims, comprising first connection members (14) of an irreversible type designed to connect the rotation of said motor (4) to the rotation of said scraper element (3).

9. The device according to one or more of the preceding claims, comprising a container (31) for collection of dust scraped by said scraper element (3) and collected by said cleaning means (6).

10. The device according to one or more of the preceding claims, in which said outer casing (2) comprises a hatch (30) designed to enable removal of the scraped dust from said cleaning means (6).

11. The device according to one or more of the preceding claims, in which said outer casing (2) houses batteries (5) for supplying said motor (4).

12. The device according to one or more of the preceding claims, in which said outer casing (2) comprises flexible portions (13) including seats designed to house said scraper element (3).

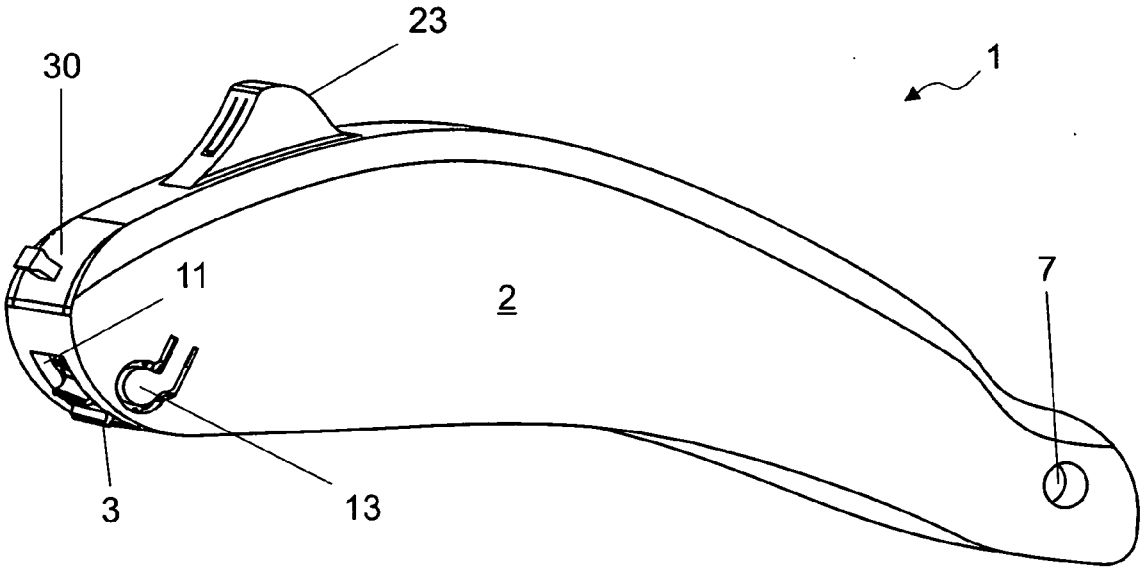
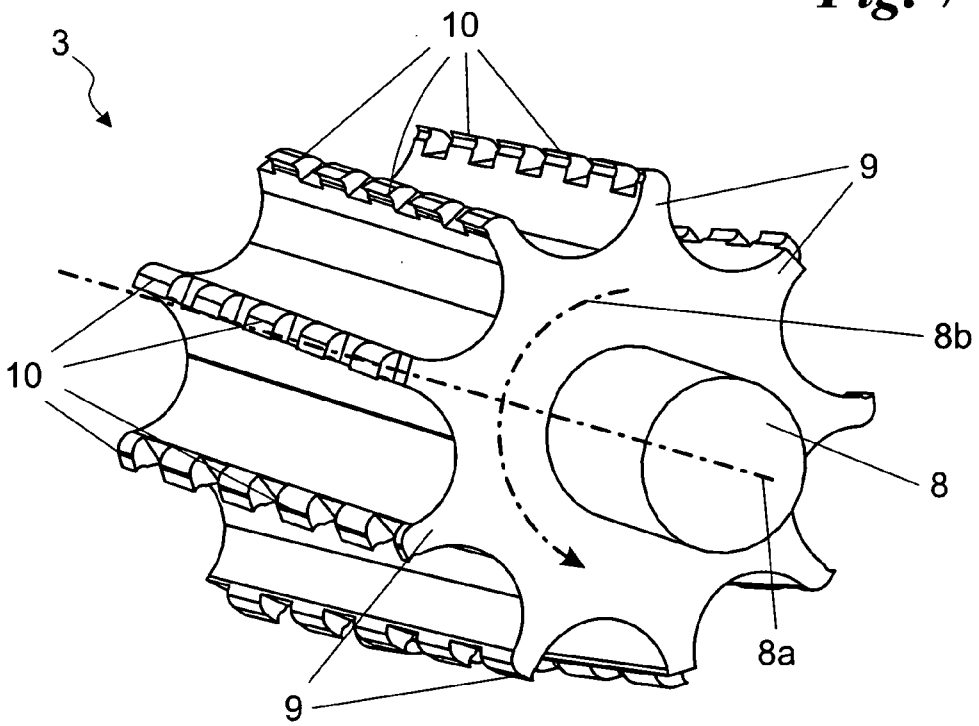


Fig. 1

Fig. 7



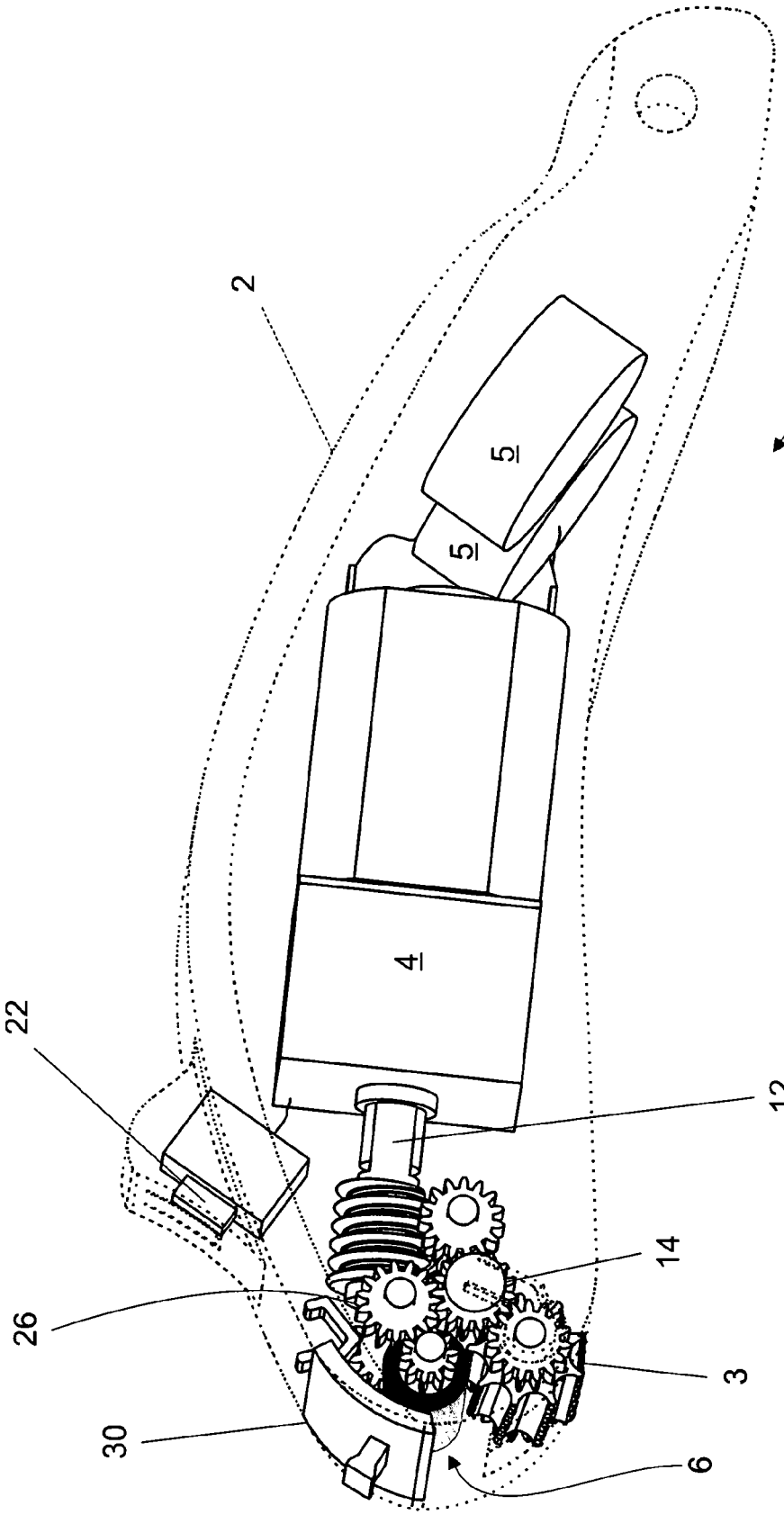


Fig. 2

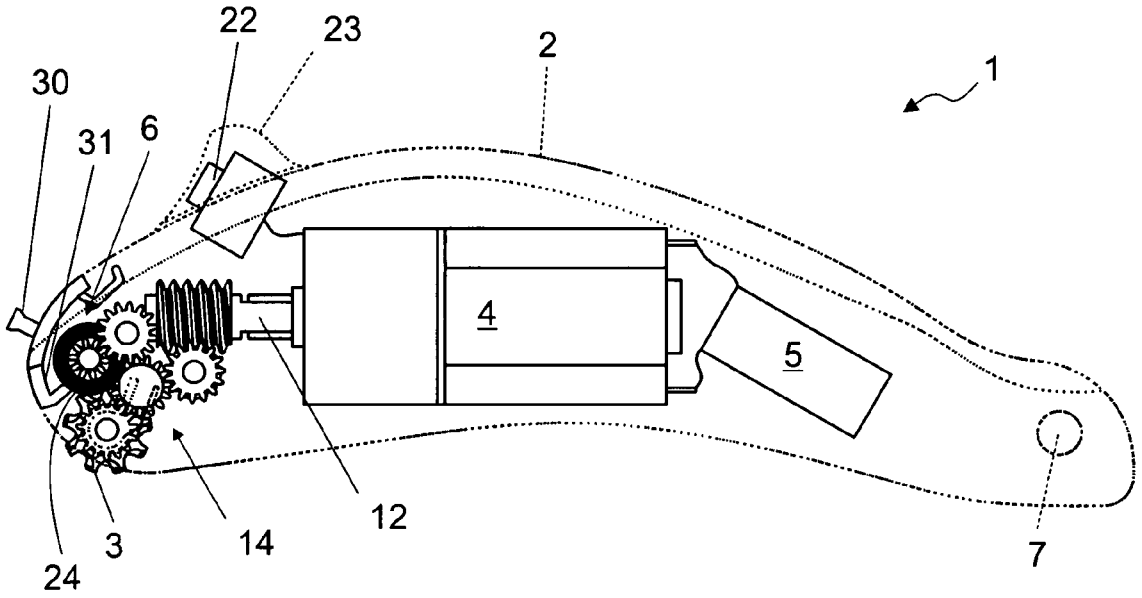
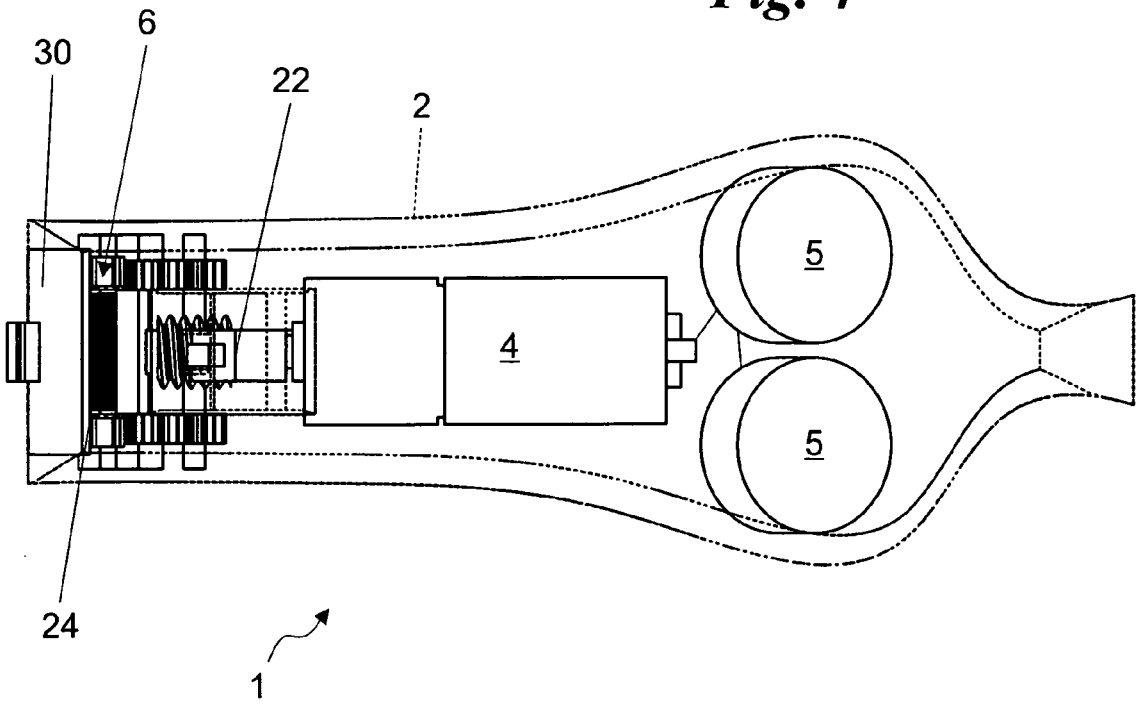
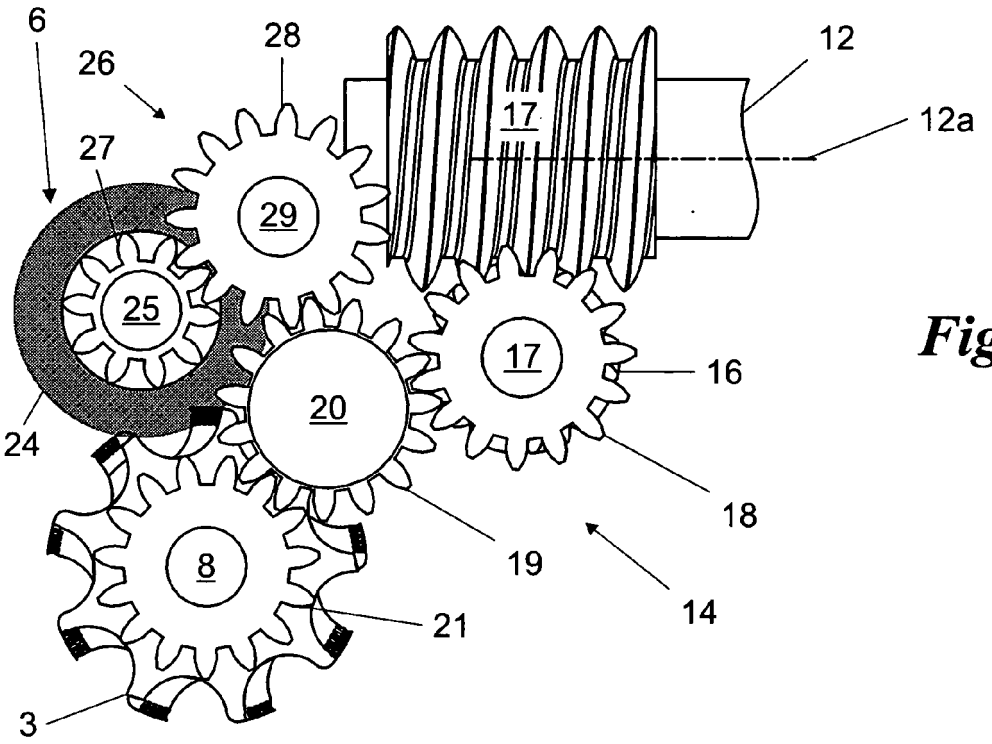


Fig. 3

Fig. 4




6
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28
12
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12a
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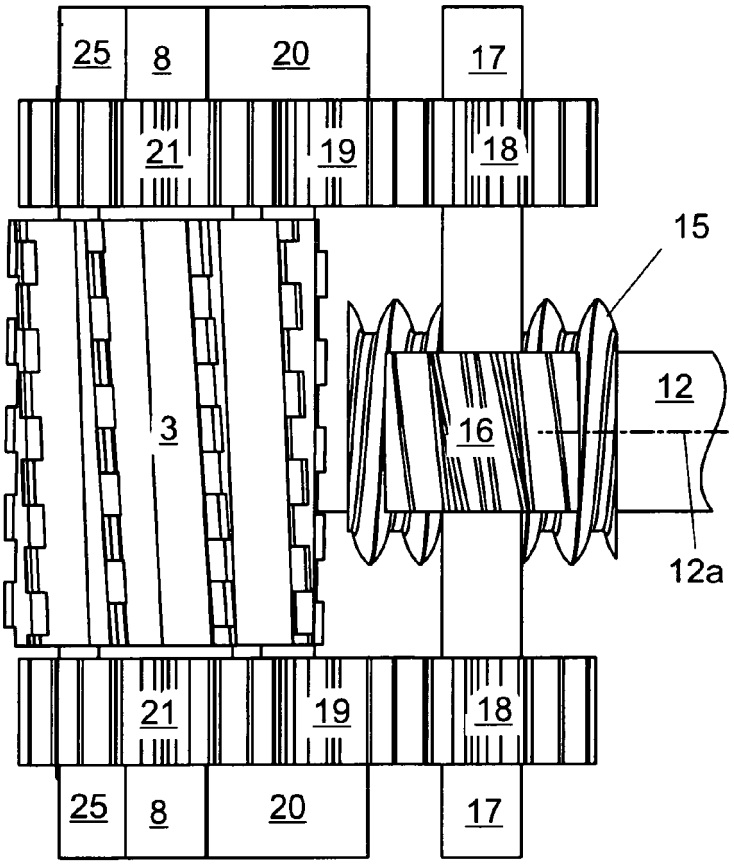
14
21
3

Fig. 5


25
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19
18
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12a
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8
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17

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 08 42 5697

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 A	US 2006/102199 A1 (VIVES-MARTINEZ WALTER J [US]) 18 May 2006 (2006-05-18) * paragraphs [0017] - [0023]; figures *	1-3,8-12 7	INV. A63F3/06
X A	EP 0 824 944 A (IER [FR]) 25 February 1998 (1998-02-25) * column 4, line 49 - column 5, line 52; figures *	1-3,8 7	
X	US 6 065 181 A (CLEVELAND THOMAS [US] ET AL) 23 May 2000 (2000-05-23) * column 4, line 10 - column 5, line 26; figures *	1,8-11	
A	US 2007/037499 A1 (BURBRIDGE SHERWOOD D [US]) 15 February 2007 (2007-02-15) * paragraphs [0022] - [0025]; figures *	1-3,11	
A	US 5 402 549 A (FORREST JERRY D [US]) 4 April 1995 (1995-04-04) * column 4, line 9 - line 28; figure 1 *	5	

TECHNICAL FIELDS SEARCHED (IPC)

A63F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 March 2009	Lucas, Peter

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006102199 A1	18-05-2006	NONE	
EP 0824944 A	25-02-1998	FR 2752384 A1	20-02-1998
US 6065181 A	23-05-2000	NONE	
US 2007037499 A1	15-02-2007	NONE	
US 5402549 A	04-04-1995	NONE	