



(43) International Publication Date  
9 January 2014 (09.01.2014)

(51) International Patent Classification:

*F04D* 25/08 (2006.01) *F01D* 7/02 (2006.01)  
*F04D* 29/38 (2006.01)

(21) International Application Number:

PCT/AU2013/000584

(22) International Filing Date:

3 June 2013 (03.06.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2012902819 2 July 2012 (02.07.2012) AU  
2013202271 2 April 2013 (02.04.2013) AU

(71) Applicant: MARTEC PTY LTD [AU/AU]; Unit 1, 6 Church Road, Moorebank, New South Wales 2170 (AU).

(72) Inventor: CARE, Christian; Unit 1, 6 Church Road, Moorebank, New South Wales 2170 (AU).

(74) Agent: GRIFFITH HACK; GPO Box 1285, Melbourne, Victoria 3001 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CEILING FAN

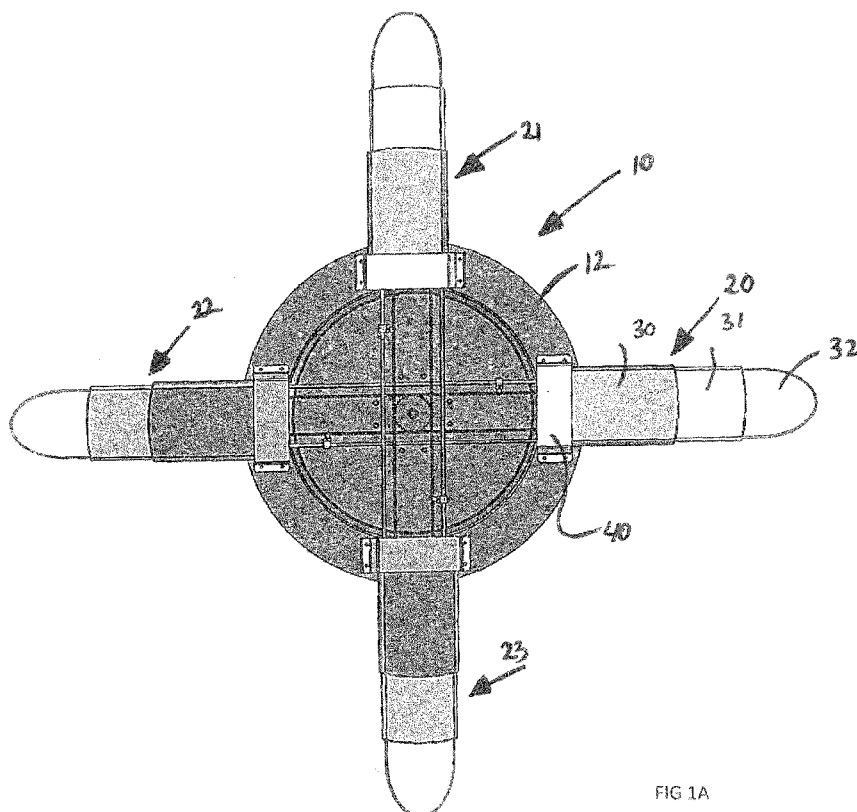


FIG 1A

[Continued on next page]



---

**Published:**

— *with international search report (Art. 21(3))*

- 1 -

**CEILING FAN****Introduction**

This invention relates to a ceiling fan and more  
5 particularly relates to a ceiling fan with retractable  
blades.

**Background of the Invention**

The problem with many ceiling fans is that the  
10 radially projecting blades become unsightly dust  
collectors when the fan is not in use. Ceiling fans that  
often incorporate light fittings and it has been proposed  
to incorporate retractable blades that retract within the  
confines of the light fitting when not in use and expand  
15 radially outwardly when in use to operate as conventional  
fan blades.

Problems with fans of this kind concern ensuring a  
balanced configuration especially as the blades move  
20 between the retracted and operative positions. A further  
problem with fans of this kind is the limit on the length  
of the blades to enable them to retract within the  
confines of the light fitting. This usually requires the  
blades to nest with the tip of one blade above the root of  
25 the adjacent blade, thus leading to an unsightly slack of  
blades. If the blades are made shorter to reduce the need  
for overlapping then the blades lack the aerodynamics to  
move sufficient air to operate efficiently as a fan.

30 It is these issues that have brought about the  
present invention.

**Summary of the invention**

According to one aspect of the present invention  
35 there is provided a fan blade comprising a mount  
supporting a plurality of superimposed fan blade segments  
arranged to slide relative to one another from a retracted

-2-

storage configuration to an extended operative configuration.

According to another aspect of the present invention  
5 there is provided a ceiling fan comprising an electric  
motor adapted to drive a rotating plate that supports a  
plurality of equally spaced fan blades that extend  
radially of the plate, each fan blade comprising a root  
and a tip joined by leading and trailing edges, the root  
10 being adapted to be secured to the plate, wherein each  
blade comprises a plurality of fan blade segments arranged  
to slide telescopically one within the other whereby the  
fan blade segments can be located substantially within the  
periphery of the plate in a retracted configuration and  
15 can extend radially outwardly in an operative  
configuration.

#### **Description of the Drawings**

Embodiments of the present invention will now be  
20 described by way of example only with reference to the  
accompanying drawings in which:

Figures 1a, 1b and 1c are respectively plan, side and  
perspective views of a fan in an expanded operative  
configuration,

25 Figures 2a, 2b, and 2c are respectively plan, side  
and perspective views of the fan in a retracted  
inoperative configuration,

Figures 3a and 3b are respectively plan and side  
elevational views of the fan in the retracted  
30 configuration illustrating a drive assembly,

Figures 4a, 4b and 4c are respectively plan, side and  
perspective views of the fan in the expanded operative  
configuration with components omitted for clarity,

Figure 5 is a plan view of part of components for the  
35 fan in the expanded configuration,

Figure 6 is a plan view of one blade assembly in the  
expanded configuration,

-3-

Figure 7 is a cross sectional view taken along the lines A-A of Figure 6,

Figure 8 is a cross sectional view taken along the lines B-B of Figure 6, and

5 Figure 9 is a cross sectional view taken along the lines C-C of Figure 6.

#### **Description of the Preferred Embodiments**

The ceiling fan 10 as illustrated in the accompanying  
10 drawings comprises an electric motor 11 that is hung from the ceiling. The electric motor 11 is coupled to a circular plate 12 whereby the motor 11 rotates the plate 12 about a vertical axis. The plate 12 is adapted to support four equally spaced fan blade assemblies 20, 21,  
15 22, 23. Each blade assembly 20 to 23 comprises three fan blade segments 30, 31, 32 that can slide relative to one another from a retracted position (Figure 2) where the fan blade segments are within the confines of the plate 12 to an outward operative position (Figure 1) in which the fan  
20 blade segments 30-32 project radially outwardly of the plate 12 to facilitate movement of air as the plate 12 is rotated by the electric motor 11. It is understood that the electric motor 11 can be either on top of or below the plate 12.

25

Each blade assembly 20- 23 is positioned on the periphery of the plate 12 via a mount 40 that is secured to the plate 12. As shown in Figure 2a the mounts 40 are  
equally spaced around the periphery of the plate to be  
30 diametrically opposed to one another.

In this embodiment the blade comprises three blade segments, namely the first outer segment 30, an intermediate segment 31 that is telescopically mounted  
35 within the outer segment 30, and an inner blade tip 32 that is again telescopically mounted within the intermediate section.

-4-

Each mount 40 comprises a pair of support legs 41, 42 having outwardly extending flanges 43, 44 that enable the legs to be screwed to the surface of the plate 12. The support legs 41, 42 support a bridging member 45 that defines a slot 46 that accommodates a first outer blade segment 30. The slot defines a passageway that allows the blade segments 30 to be a smooth sliding fit within the slot 46. The legs 41, 42 of the mount assembly are also arranged so that the slot is on an incline of between 10 and 15 degrees (see Figure 2b). The angle on the slot gives the blade, which is otherwise flat, an angle of incidence to give the desired air movement when in the extended and operative position.

15

The blade segments 30, 31, 32 all slide relative to one another so that in the retracted position (Figure 2) the tip 32 is wholly within the intermediate segment 31 which is wholly within the outer segment 30. In the extended position shown in Figure 2 the tip 32 projects radially outwardly of the intermediate segment 31 which is in turn radially outwardly of the outer segment 30. The telescopic arrangement of the three blade segments allows the segments to slide outwardly and the force to urge this outward movement is the centrifugal force generated by rotation of the plate 12 by the electric motor 11.

20

Each diametrically opposed pair of blade assemblies 21, 22 or 23, 24 are interconnected by a chain 50 that rotates about a sprocket 51 located on the underside of each mount 40. The chain is also coupled to a centrally located sprocket 52 that is in turn coupled to a coil spring 53 located within a housing 54. The chain 50 is attached to an elongate rod 60 via an adjustable linkage.

30

As shown in Figure 6 the rod 60 extends parallel to the chain 50 and is coupled to an inner end of the outer

35

- 5 -

blade segment 32. Movement of the chain 50 pulls the rod  
60 radially inwards to pull the outer blade segment 32  
into the intermediate segment 31 until the inner end of  
the blade segment 32 abuts stop 63 on the inner end of the  
5 intermediate segment 31. Further movement of the rod 60  
causes inward displacement of the intermediate segment 31  
until it engages stops 64 on the inner end of the first  
blade segment 30. All these segments 30, 31, 32 are then  
pulled by the rod 60 under the mount 40 to assume the  
10 fully retracted position shown in Figure 2.

As the centrifugal force of the fan 10 forces the  
blade 30-32 segments outwardly the movement of the  
segments causes rotation of the sprocket 51 under the  
15 mount 40 to drive the chain 50 to in turn rotate the  
central sprocket 52 against the spring 53. As the fan 10  
slows down the coil spring 53 urges the central sprocket  
52 to rotate the chain 50 and pull back the fan segments  
30-32 to the retracted position. In this manner, the  
20 sprocket and chain drive not only controls the outward  
movement of the fan segments but through the spring 53  
brings the segments back into the retracted position when  
not in use. To avoid collision of the chains 50 two  
central sprockets 52 are provided in different vertical  
25 planes with the upper sprocket driving the fan blade  
assemblies 20 and 21 and the lower sprocket driving the  
other pair of fan blade assemblies 22 and 23.

The fan blade segments 30-32 are moulded in plastics  
30 to define leading and trailing edges. The blade segments  
30-32 are substantially flat and the tip segment 32 has a  
curved end.

The fan described above has a number of advantages  
35 over conventional fans with retractable blades. Because  
the blades do not pivot from the operative to the  
retracted positions there is no danger of collision

- 6 -

between the blades during the retraction process.  
Furthermore, the fact that the blade segments expand  
radially or in a longitudinal sense means that the blades  
can be designed to have increased length to thereby  
5 increase the airflow. Furthermore, the telescopic  
location of the blade segments allows the fan to assume a  
compact and comparatively thin configuration in the  
retracted position which makes the fan, especially when it  
incorporates a light fitting, much more attractive in the  
10 retracted position than is the case with other fans with  
retractable blades where the blades form an unsightly nest  
above the light fitting.

In the claims which follow and in the preceding  
15 description of the invention, except where the context  
requires otherwise due to express language or necessary  
implication, the word "comprise" or variations such as  
"comprises" or "comprising" is used in an inclusive sense,  
i.e. to specify the presence of the stated features but  
20 not to preclude the presence or addition of further  
features in various embodiments of the invention.

- 7 -

**CLAIMS:**

1. A fan blade comprising a mount supporting a plurality  
of superimposed fan blade segments arranged to slide  
5 relative to one another from a retracted storage  
configuration to an extended operative configuration.
2. The fan blade according to claim 1 wherein the fan  
blade segments slide telescopically one within the  
10 other.
3. The fan blade according to either claim 1 or 2  
wherein, the mount is adapted to be secured to a  
rotating plate whereby the fan blade, in the  
15 operative configuration extends radially of the  
rotating plate.
4. The fan blade according to any one of the proceeding  
claims wherein the mount supports three fan blade  
20 segments, the outer blade segment defining a tip of  
the blade.
5. The fan blade according to any one of the preceding  
claims wherein the fan blade segments are  
25 substantially flat.
6. A ceiling fan comprising an electric motor adapted to  
drive a rotating plate that supports a plurality of  
equally spaced fan blades that extend radially of the  
30 plate, each fan blade comprising a root and a tip  
joined by leading and trailing edges, the root being  
adapted to be secured to the plate, wherein each  
blade comprises a plurality of fan blade segments  
arranged to slide telescopically one within the other  
35 whereby the fan blade segments can be located  
substantially within the periphery of the plate in a

- 8 -

retracted configuration and can extend radially outwardly in an operative configuration.

- 5        7. The ceiling fan according to claim 6 wherein as the fan rotates the fan blade segments slide outwardly due to centrifugal forces.
- 10       8. The ceiling fan according to claim 7 wherein biasing means pulls the fan blade segments back into the retracted configuration against the centrifugal force as the fan slows down to a stop.
- 15       9. The ceiling fan according to claim 8 wherein opposed blades are interconnected by a chain driven by a sprocket including biasing means which rotates the chain to pull back the blade segments as the fan slows to a stop.
- 20       10.      The ceiling fan according to any one of claims 6 to 9 wherein each blade has an angle of incidence to the horizontal, preferably between 10 and 15 degrees.
- 25       11.      The ceiling fan according to any one of claims 6 to 10 wherein the rotating plate supports four equally spaced radially extending blades.
- 30       12.      The ceiling fan according to any one of claims 6 to 11 wherein each blade is secured to the plate by a mount.
13.      The ceiling fan according to claim 12 wherein the mount includes a slot through which the blade slides.

1/11

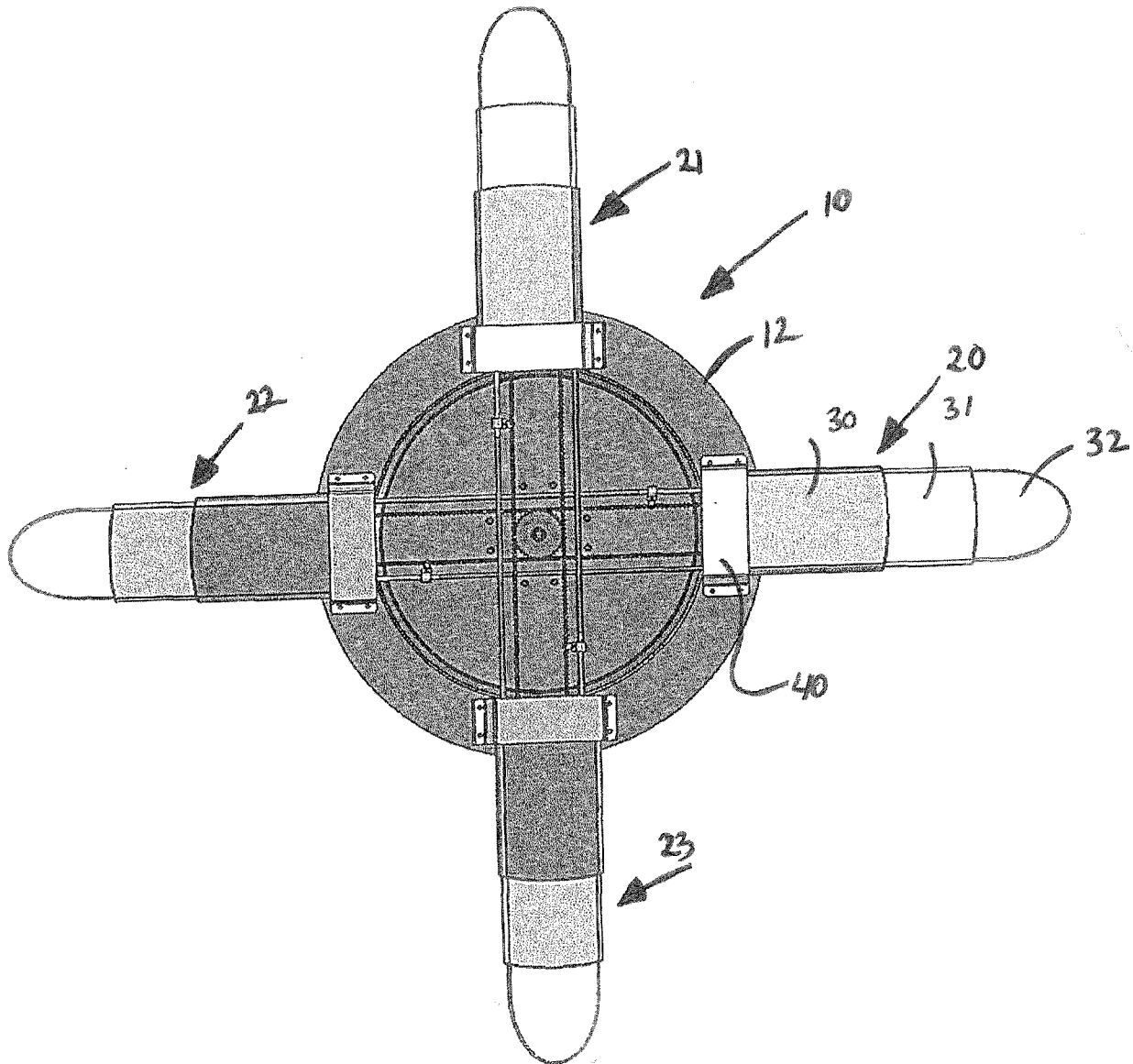


FIG 1A

2/11

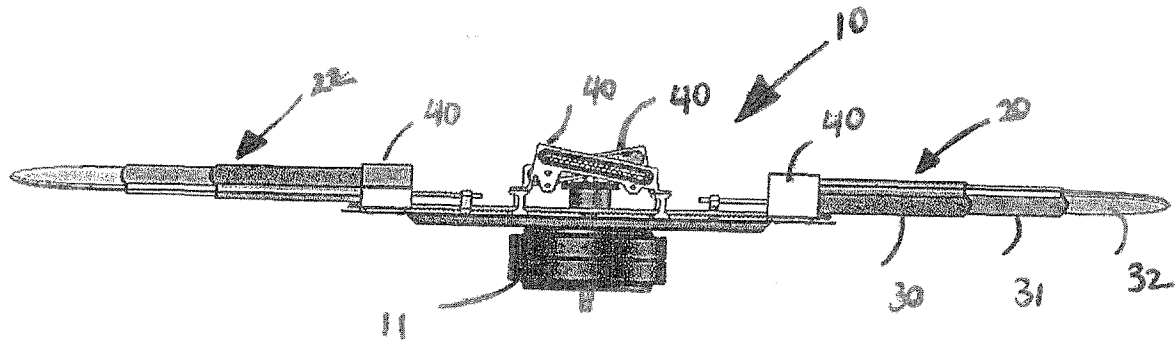


FIG 1B

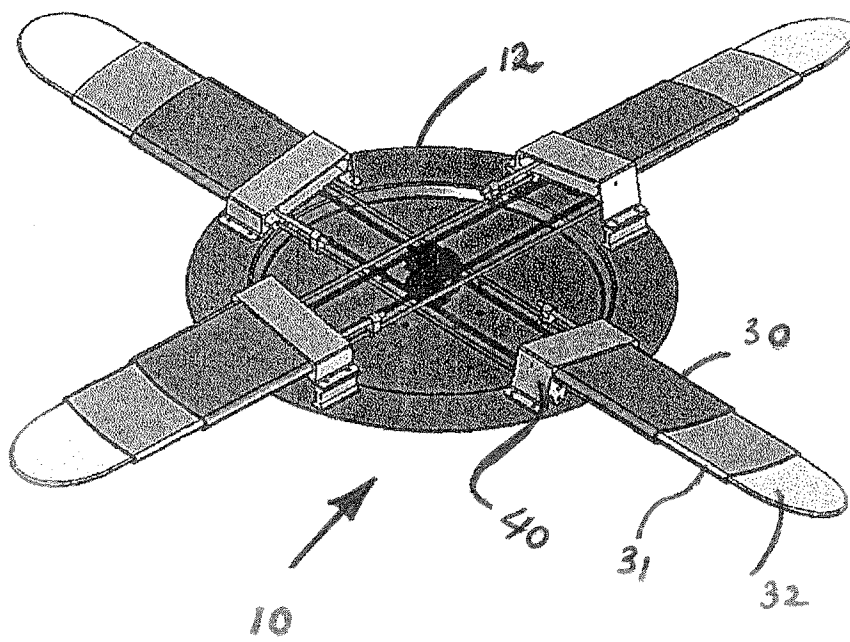


FIG 1C

3/11

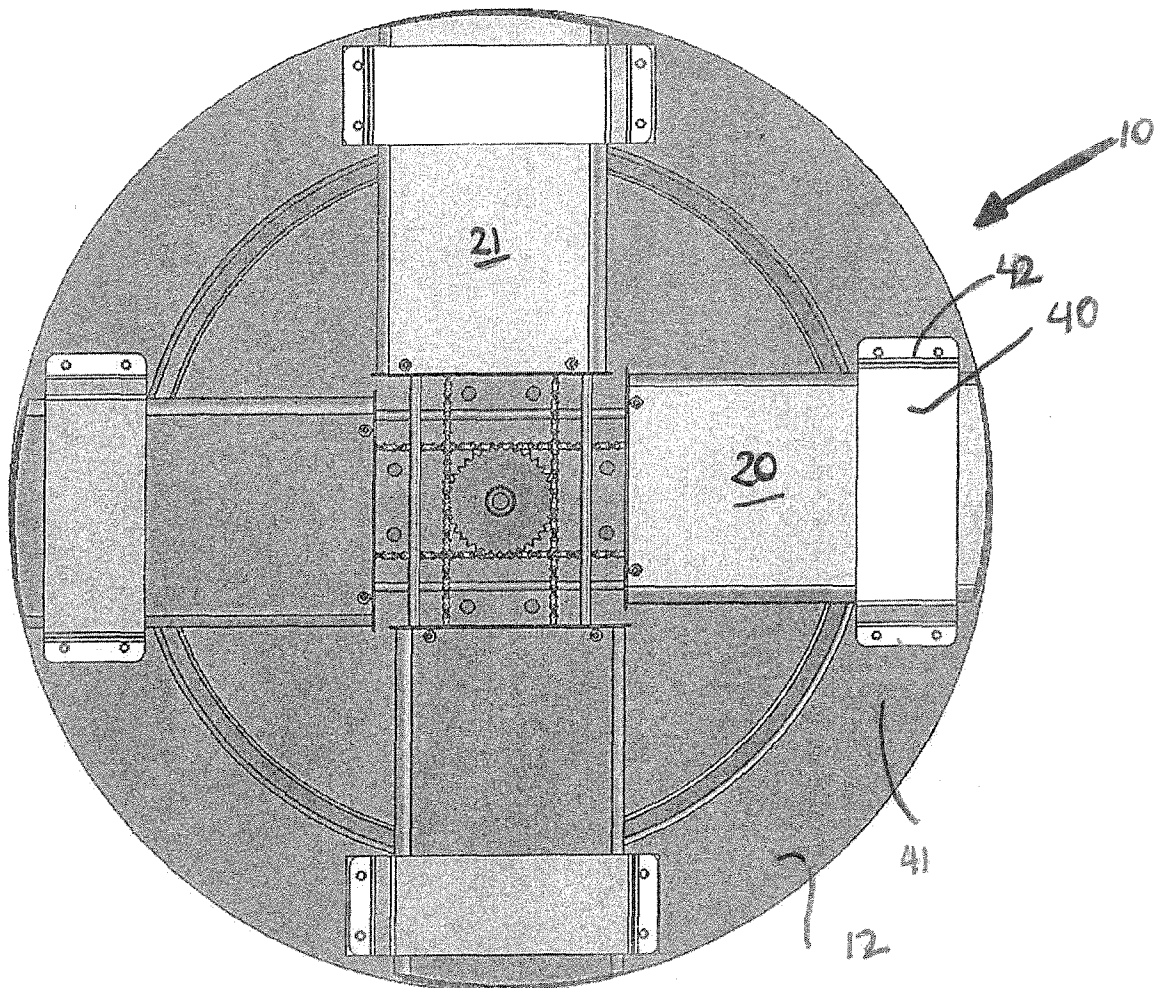
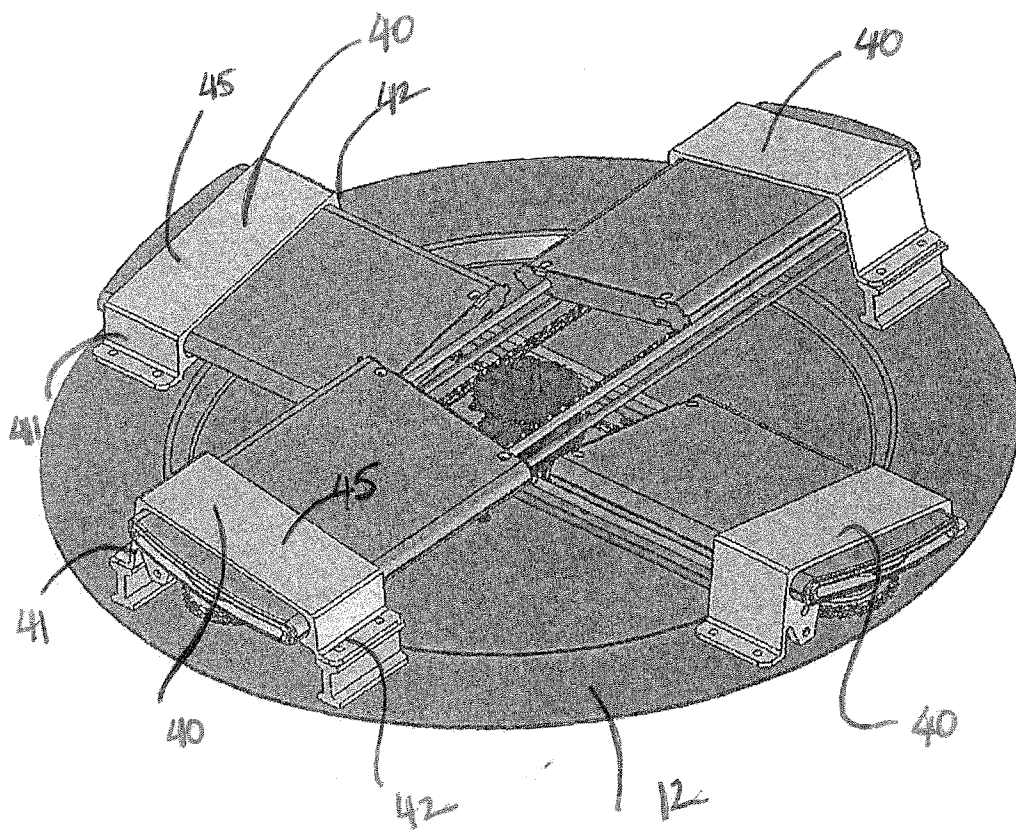
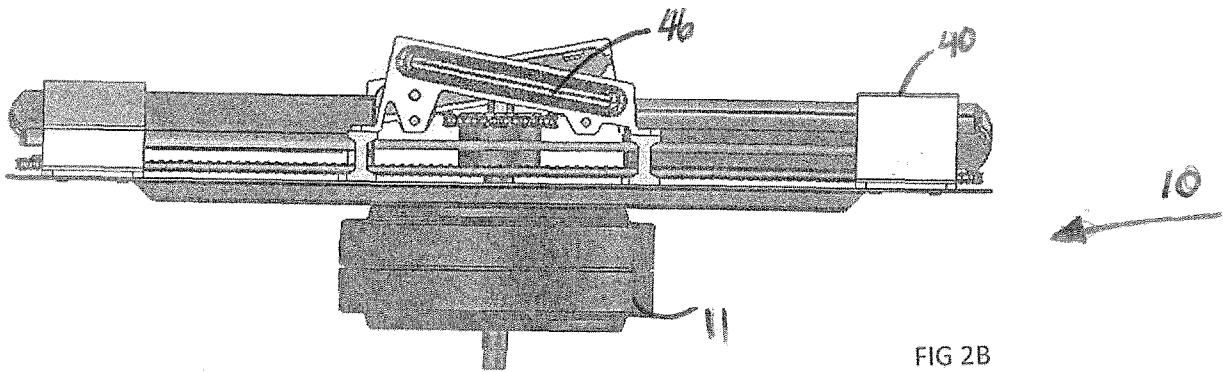
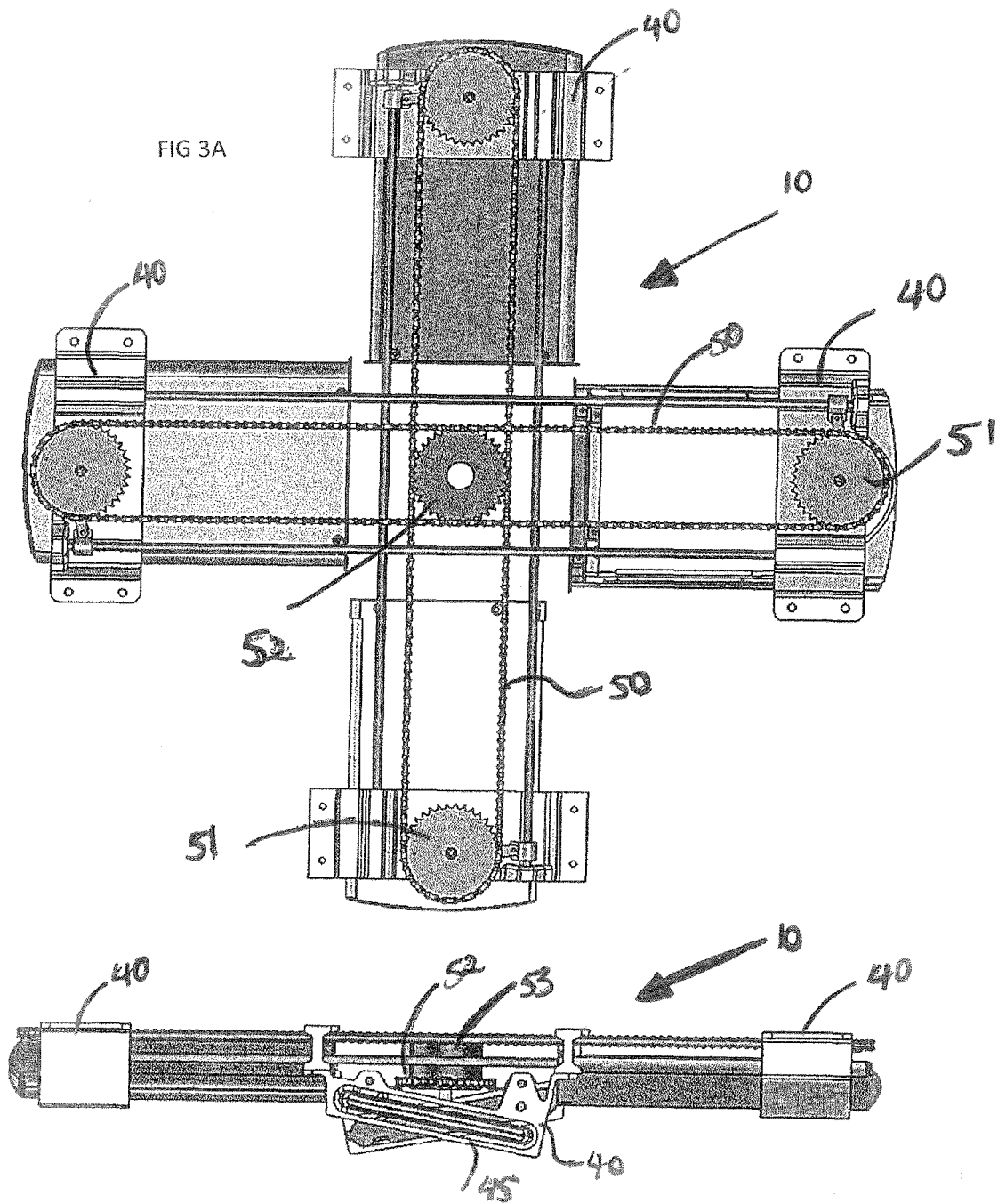


FIG 2A

4/11



5/11



6/11

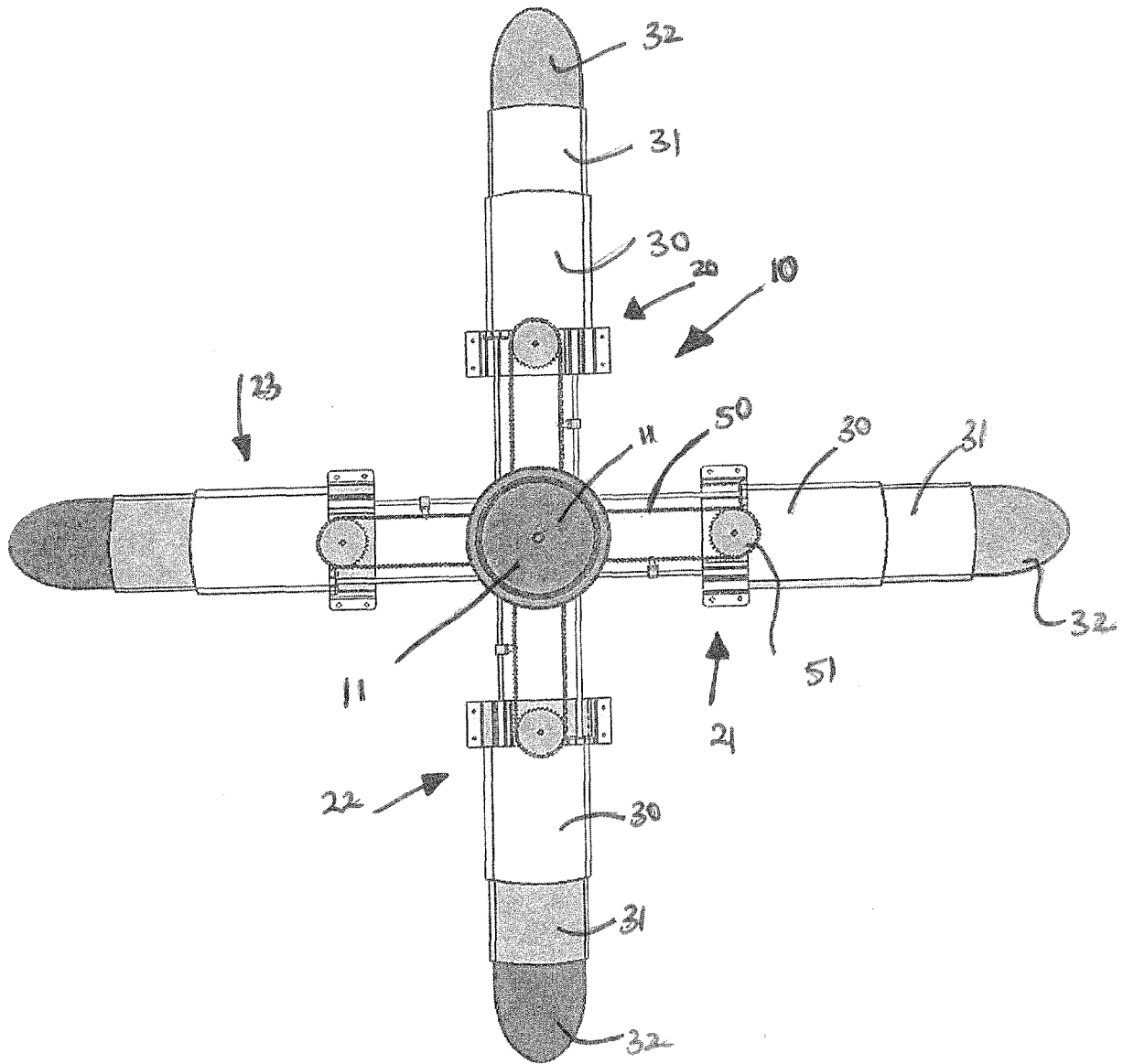


FIG 4A

7/11

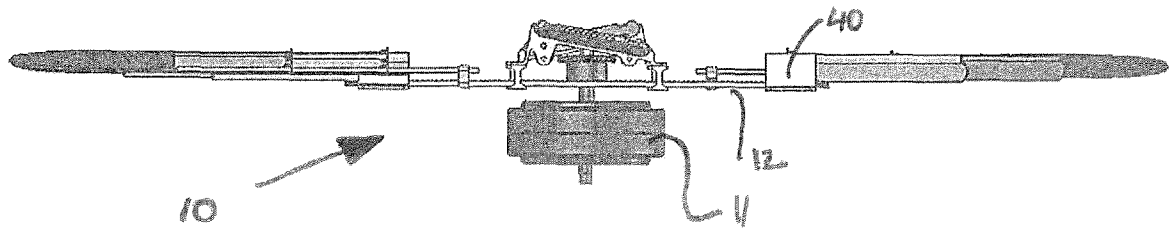


FIG 4B

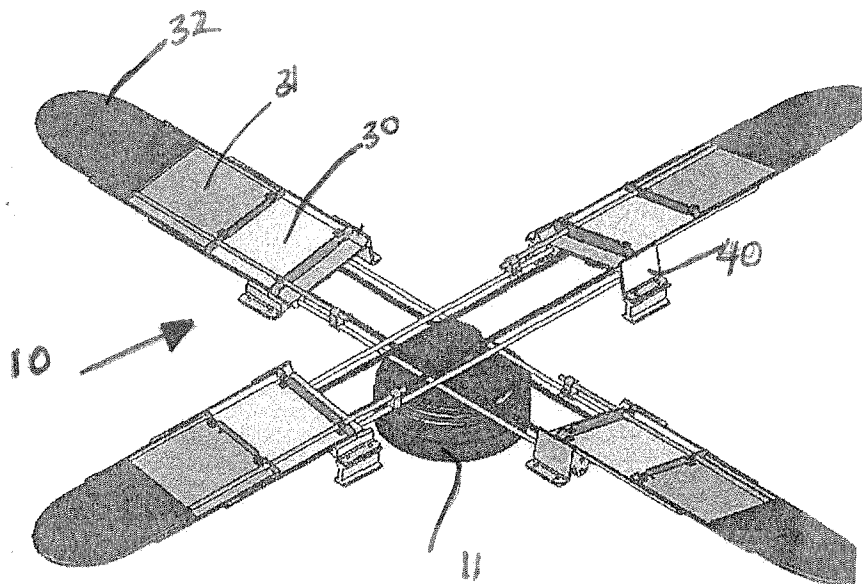


FIG 4C

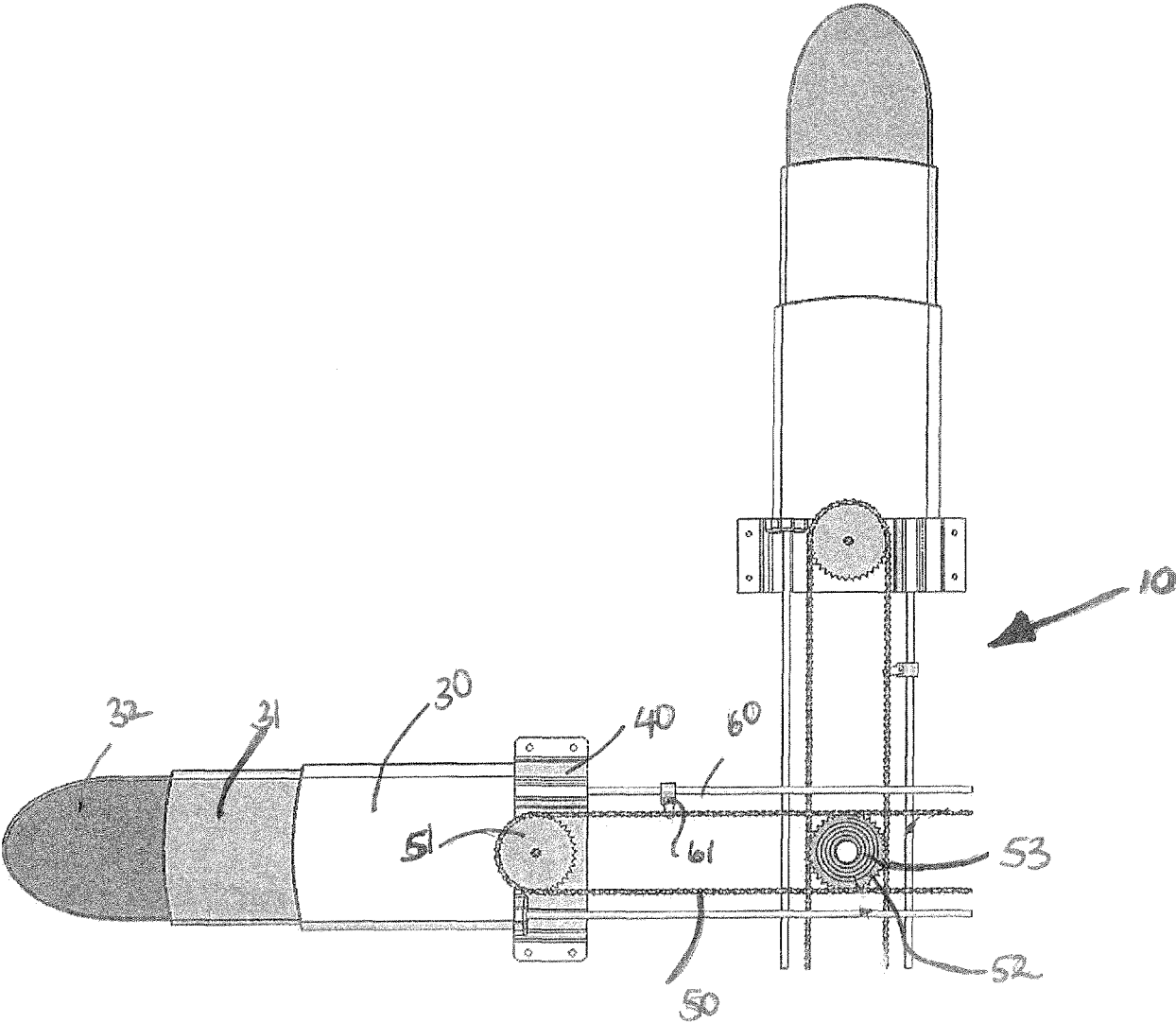
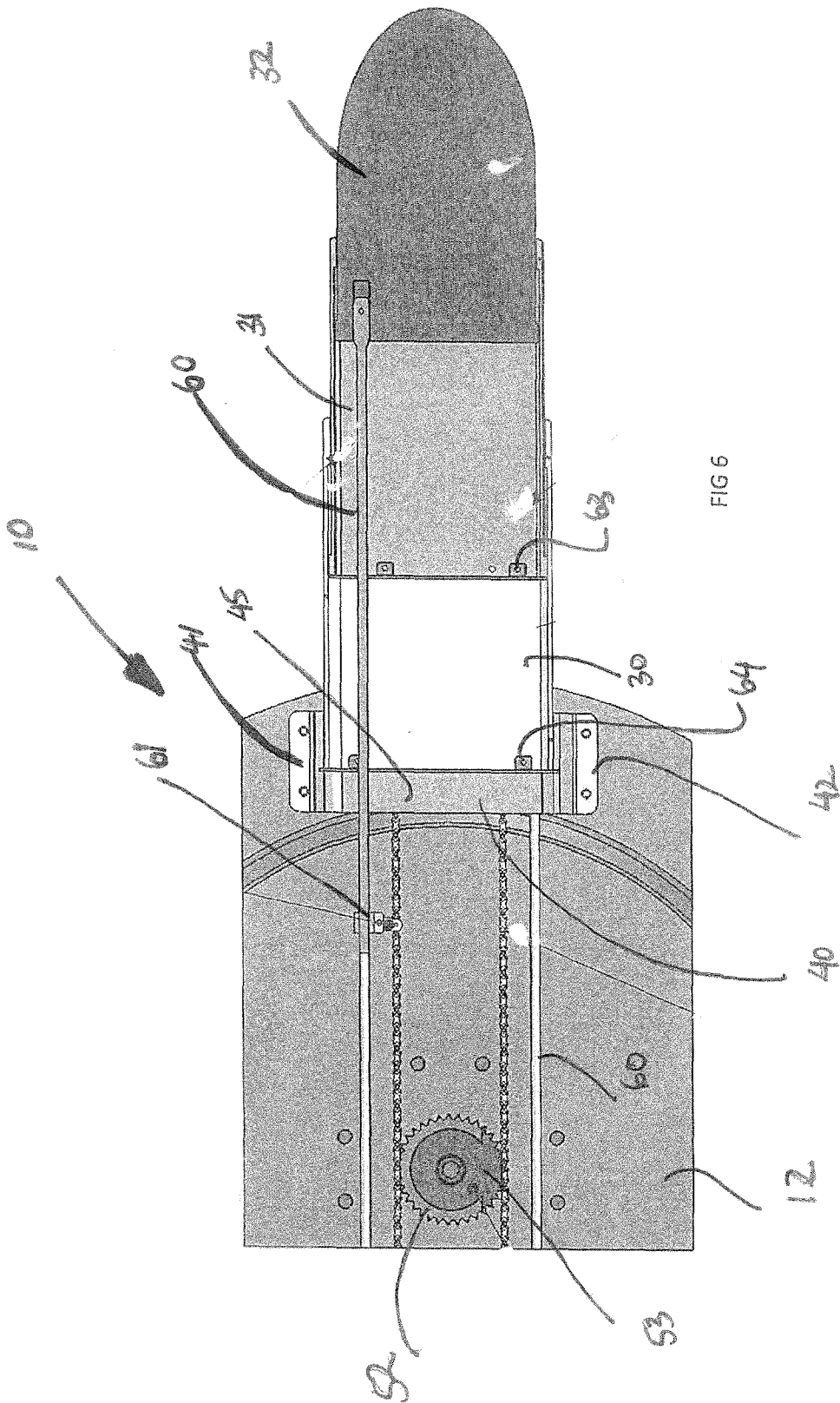


FIG 5



10/11

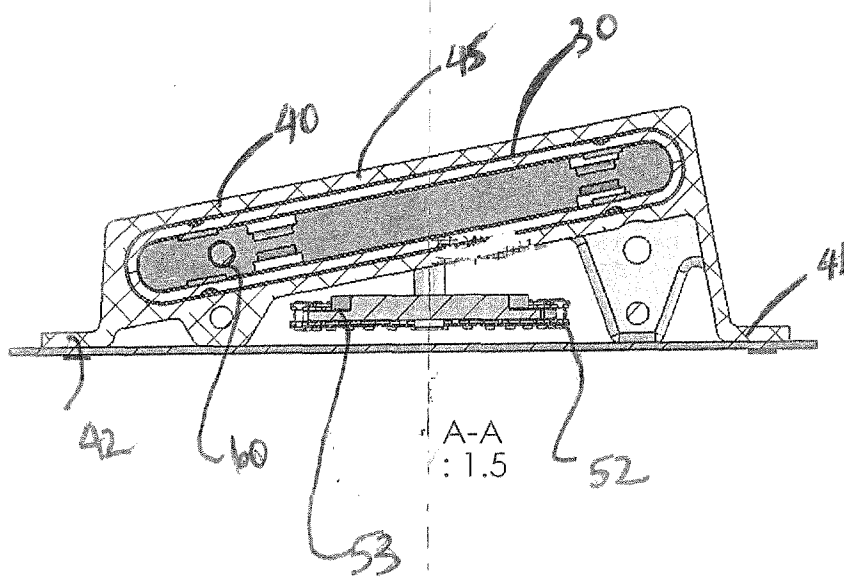
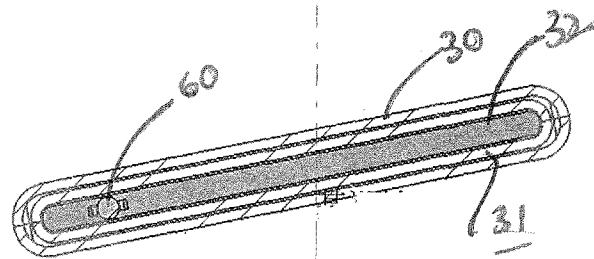


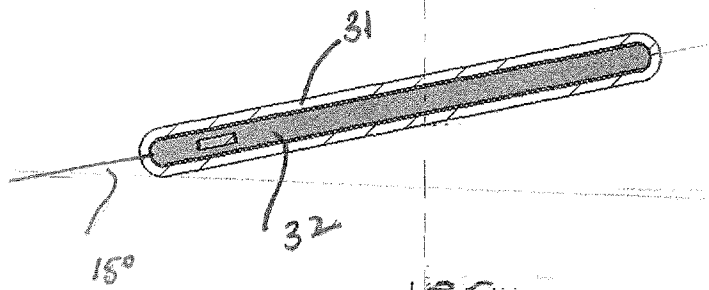
FIG 7

11/11



B-B  
: 1.5

FIG 8



C-C  
: 1.5

FIG 9

## INTERNATIONAL SEARCH REPORT

 International application No.  
**PCT/AU2013/000584**

## A. CLASSIFICATION OF SUBJECT MATTER

**F04D 25/08 (2006.01) F04D 29/38 (2006.01) F01D 7/02 (2006.01)**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

1. WPI, EPODOC: IPC, CPC F01D 7/02, F04D 25/08, F04D 29/38 and Keywords (fan, blade, telescopic, ceiling, slide) and like terms.
2. WPI, EPODOC: keywords (ceiling, fan, blade, segment, telescopic, slide) and like terms.
3. EPODOC: CPC F04D 25/088/CN and keywords (telescopic, blade).
4. Google patents: keywords (ceiling, fan, blade, telescopic, segment) and like terms.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|------------------------------------------------------------------------------------|-----------------------|
|           | Documents are listed in the continuation of Box C                                  |                       |

☒ Further documents are listed in the continuation of Box C
                 
 ☒ See patent family annex

|                                                                                                                                                                                            |                                                                                                                                                                     |                                                                                                                                          |                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| *<br>"A"                                                                                                                                                                                   | Special categories of cited documents:<br>document defining the general state of the art which is not considered to be of particular relevance                      | "T"                                                                                                                                      | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                                              |
| "E"                                                                                                                                                                                        | earlier application or patent but published on or after the international filing date                                                                               | "X"                                                                                                                                      | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                                                                     |
| "L"                                                                                                                                                                                        | document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y"                                                                                                                                      | document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "O"                                                                                                                                                                                        | document referring to an oral disclosure, use, exhibition or other means                                                                                            | "&"                                                                                                                                      | document member of the same patent family                                                                                                                                                                                                    |
| "P"                                                                                                                                                                                        | document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                          |                                                                                                                                                                                                                                              |
| Date of the actual completion of the international search<br>11 July 2013                                                                                                                  |                                                                                                                                                                     | Date of mailing of the international search report<br>11 July 2013                                                                       |                                                                                                                                                                                                                                              |
| Name and mailing address of the ISA/AU<br><br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>Email address: pct@ipaustralia.gov.au<br>Facsimile No.: +61 2 6283 7999 |                                                                                                                                                                     | Authorised officer<br><br>Dr Arun Sharma<br>AUSTRALIAN PATENT OFFICE<br>(ISO 9001 Quality Certified Service)<br>Telephone No. 0262223642 |                                                                                                                                                                                                                                              |

| INTERNATIONAL SEARCH REPORT                           |                                                                                                    | International application No. |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------|
| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                    | PCT/AU2013/000584             |
| Category*                                             | Citation of document, with indication, where appropriate, of the relevant passages                 | Relevant to claim No.         |
| X                                                     | US 2010/0034651 A1 (WIEGEL et al.) 11 February 2010<br>Figures 8, 9; paragraph [0029]              | 1, 2, 5                       |
| Y                                                     | Figures 8, 9; paragraph [0029]                                                                     | 3, 6-8, 10-13                 |
| X                                                     | US 2007/0092376 A1 (MALONE et al.) 26 July 2007<br>Figures 4A, 4B; paragraph [0027]-[0031]         | 1, 2, 5                       |
| X                                                     | CN 202132274 U (UNIV HEHAI) 01 February 2012<br>EPODOC English Abstract and Figures                | 1, 2, 4, 5                    |
| X                                                     | CN 201401354 Y (WUHAN NO 11 MIDDLE SCHOOL) 10 February 2010<br>EPODOC English Abstract and Figures | 1, 2, 4, 5                    |
| Y                                                     | US 2011/0318202 A1 (CARE) 29 December 2011<br>Figures 1-4, Paragraphs [0007], [0025]               | 3, 6-8, 10-13                 |
|                                                       |                                                                                                    |                               |

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/AU2013/000584****Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

**See Supplemental Box for Details**

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

## Supplemental Box

**Continuation of: Box III**

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to potentially distinguish the claimed combination of features from the prior art. Where different claims have different distinguishing features they define different inventions.

This International Searching Authority has found that there are two different inventions as follows

1. Claims 1-5 are directed to “*a fan blade comprising a mount supporting a plurality of superimposed fan blade segments arranged to slide relative to one another from a retracted storage configuration to an extended operative configuration*”. It is considered that the feature in italics within inverted commas comprises a first distinguishing feature.
2. Claims 6-13 are directed to “*a ceiling fan*” comprising an electric motor adapted to drive a rotating plate that supports a plurality of equally spaced fan blades that extend radially of the plate, each fan blade comprising a root and a tip joined by leading and trailing edges, the root being adapted to be secured to the plate, “*wherein each blade comprises a plurality of fan blade segments arranged to slide telescopically one within the other whereby the fan blade segments can be located substantially within the periphery of the plate in a retracted configuration and can extend radially outwardly in an operative configuration*”. It is considered that the feature in italics within inverted commas comprises a second distinguishing feature.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature common to all the claimed inventions there is no unity of invention.

In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claimed inventions and therefore cannot provide the required technical relationship. The only feature common to both the claimed inventions and which provides a technical relationship among them is “*a blade comprises a plurality of fan blade segments*.” However this feature does not make a contribution over the prior art because it is disclosed in at least the following prior art document:

D1 US 2010/0034651 A1 (WIEGEL et al.) 11 February 2010.

D1 (Figures 8, 9; paragraph [0029]) discloses that blade (74) comprises a plurality of fan blade segments (74a, 74b).

Therefore in light of this document this common feature cannot be a special technical feature. Therefore there is no special technical feature common to all the claimed inventions and the requirements for unity of invention are consequently not satisfied *a posteriori*.

|                                                                                                                                                                                                                                                                       |                         |                                                           |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------|-------------------------|
| <b>INTERNATIONAL SEARCH REPORT</b><br>Information on patent family members                                                                                                                                                                                            |                         | International application No.<br><b>PCT/AU2013/000584</b> |                         |
| This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information. |                         |                                                           |                         |
| <b>Patent Document/s Cited in Search Report</b>                                                                                                                                                                                                                       |                         | <b>Patent Family Member/s</b>                             |                         |
| <b>Publication Number</b>                                                                                                                                                                                                                                             | <b>Publication Date</b> | <b>Publication Number</b>                                 | <b>Publication Date</b> |
| US 2010/0034651 A1                                                                                                                                                                                                                                                    | 11 Feb 2010             | US 8142156 B2                                             | 27 Mar 2012             |
|                                                                                                                                                                                                                                                                       |                         | WO 2010019475 A2                                          | 18 Feb 2010             |
| US 2007/0092376 A1                                                                                                                                                                                                                                                    | 26 Jul 2007             | US 7354246 B2                                             | 08 Apr 2008             |
| CN 202132274 U                                                                                                                                                                                                                                                        | 01 Feb 2012             | None                                                      |                         |
| CN 201401354 Y                                                                                                                                                                                                                                                        | 10 Feb 2010             | None                                                      |                         |
| US 2011/0318202 A1                                                                                                                                                                                                                                                    | 29 Dec 2011             | SG 177048 A1                                              | 30 Jan 2012             |
|                                                                                                                                                                                                                                                                       |                         | TW 201200739 A                                            | 01 Jan 2012             |
|                                                                                                                                                                                                                                                                       |                         | US 2011318202 A1                                          | 29 Dec 2011             |
| <b>End of Annex</b>                                                                                                                                                                                                                                                   |                         |                                                           |                         |
| <div>             Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.<br/>             Form PCT/ISA/210 (Family Annex)(July 2009)           </div>                                              |                         |                                                           |                         |