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(54) **Can opener**

(57) A can opener has a cutter blade (12) mounted with a body and a traction wheel (13) mounted with the body on or adjacent the cutter blade (12). One of the cutter blade (12) or traction wheel (13) is movable with respect to the other between an inoperative position and an operative position. In the inoperative position the traction wheel (13) and the cutter blade (12) are spaced apart so that a rim of a can to be opened may be located between the traction wheel (13) and the cutter blade (12). In the operative position the traction wheel (13) and the cutter blade (12) engage a can for opening the can. The can opener has an operating element (14, 15) that is operable by a user of the can opener for turning the traction wheel (13). Operation of the operating element (14, 15) also moves the cutter blade (12) and traction wheel (13) from the inoperative position to the operative position.

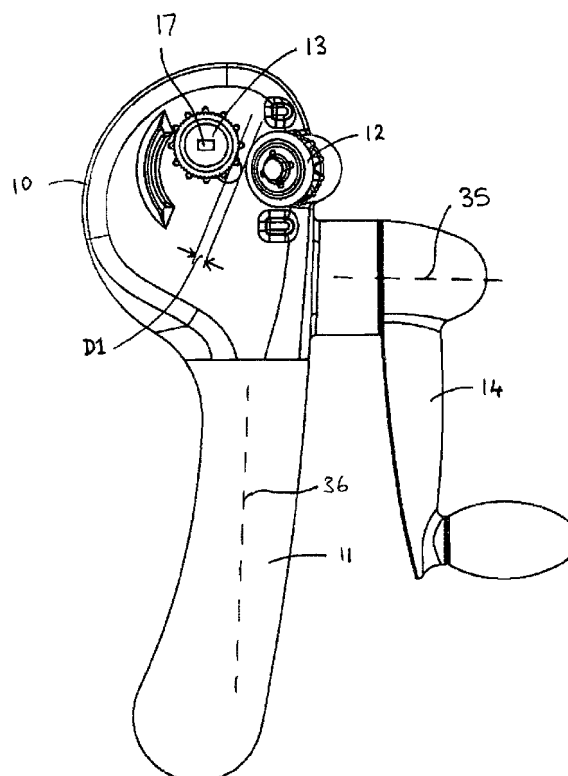


Figure 1

Description

Field of the Invention

[0001] The invention relates to manually operable can openers, and in particular to can openers of the vertical-cutting and of a laterally-cutting type.

Background to the Invention

[0002] Manually operable can openers have been known for many years and may be broadly categorised into three types: a first type having a cutter blade which cuts directly into the top wall of a can - known as a vertical-cutting type can opener, and a second type having a cutter blade which cuts into the side wall of the can below the rim cuts partially into the rim of a can - known as laterally-cutting type can openers.

[0003] A typical can opener comprises first and second elongate operating elements pivotally connected to each other. Each operating element has a handle portion. One operating element has a rotatable traction wheel pivotally opposite its handle, and the other operating element has a cutter blade pivotally opposite its handle. Movement of the handles relative to each other moves the traction wheel and cutter blade between an inoperative position to receive a rim of a can therebetween and an operative position in which the traction wheel and cutter blade engage the rim of the can. During operation of the can opener the two handles must be firmly held together in one hand while an operating handle is turned (to move the can rim between the cutter and traction wheel) with the other hand.

[0004] Two problems with the above can opener are that the best position for holding the handles together is often not the most comfortable position for using the opener, and it can be difficult for persons with a weak grip to squeeze the handles together with sufficient force during operation of the can opener to properly engage the can rim between the cutter and traction wheel.

Summary of the Invention

[0005] Generally, the invention provides a can opener comprising a body having an head and a handle extending from the head, a cutter blade mounted with the body on or adjacent the head and a traction wheel mounted with the body on or adjacent the cutter blade. One of the cutter blade or traction wheel is movable with respect to the other between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can. The can opener also comprises an operating element that is operable by a user of the can opener for turning the traction wheel. Operation of the operating element moves the cutter blade

and traction wheel from the inoperative position to the operative position.

[0006] According to a first aspect of the invention there is provided a can opener comprising a body having an head and a handle extending from the head and a cutter blade mounted with the body on or adjacent the head. A shaft is located with the head. A traction wheel is provided at a first end of the shaft. The shaft is rotational about an axis and movable in a direction lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can. An operating element is provided on one side of the can opener and supported by the body. Drive means couples the operating element and shaft for rotating the shaft by operation of the operating element. The shaft is biased in the inoperative position and rotation of the shaft moves the shaft to the operative position.

[0007] Preferably, the can opener further includes a cam engagement surface and a cam located with the shaft, wherein rotation of the shaft engages the cam with the cam engagement surface thereby moving the shaft to the operative position.

[0008] Preferably, the shaft is positioned in an arcuate slot in the head and moves in an arc.

[0009] Preferably, the shaft moves in an arc of between 25 and 30 degrees.

[0010] Preferably, the drive means comprises a first gear driven by the operating element and a second gear located on the shaft and engaged with the first gear for rotation of the shaft, an axis of the first gear being located at a centre of the arc.

[0011] Preferably, the operating element is rotatable about an axis perpendicular to a rotational axis of shaft, the drive means further including a first bevel-gear coupled to the operating element and a second bevel-gear engaging the first bevel-gear and coupled to first gear.

[0012] Preferably, said first bevel-gear has fewer teeth than the second bevel-gear, providing a mechanical advantage for said operating element.

[0013] Preferably, the shaft is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis perpendicular to the longitudinal axis of the handle and perpendicular to the axis of the shaft.

[0014] Preferably, the shaft is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis oblique to the longitudinal axis of the handle and perpendicular to the axis of the shaft.

[0015] Preferably, the cutter blade is rotationally mounted with the body on a cutter axis oblique to the axis of the shaft.

[0016] According to a second aspect of the invention there is provided a can opener comprising a body having an head and a handle extending from the head. A cutter

blade is mounted with the body on or adjacent the head. A traction wheel is rotationally mounted with the head. An operating element is provided on one side of the can opener and is supported by the body for rotating the traction wheel. The cutter blade is rotational about an axis and movable in a direction lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can. The cutter blade is biased in the inoperative position and rotation of the traction wheel moves the cutter blade to the operative position.

[0017] Preferably, the can opener further includes a cam rotational with the traction wheel and a cam-follower engageable with the cam for moving the cutter blade to the operative position.

[0018] Preferably, the cutter blade is mounted on a pivotal arm connected with the cam-follower.

[0019] Preferably, the arm and cutter blade move in an arc of between 25 and 30 degrees.

[0020] Preferably, the can opener further includes gearing for mechanically coupling said operating element to said traction wheel, the gearing comprising a first bevel-gear coupled to the operating element and a second bevel-gear engaging the first bevel-gear and coupled to traction wheel.

[0021] Preferably, the first bevel-gear has fewer teeth than the second bevel-gear, providing a mechanical advantage for said operating element.

[0022] Preferably, the traction wheel is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis oblique to the longitudinal axis of the handle and perpendicular to the axis of the traction wheel.

[0023] Preferably, the cutter blade is rotationally mounted on a cutter axis oblique to the axis of the traction wheel.

[0024] Further aspects of the invention will become apparent from the following description, which is given by way of example only.

Brief Description of the Drawings

[0025] Embodiments of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 illustrates a front side of a can opener according to a first aspect of the invention, shown in an inoperative condition,

Figure 2 shows the head of the can opener of Figure 1 with the traction wheel removed to show features there below,

Figure 3 shows the internal drive means of the can

opener from the back side in the inoperative condition,

Figure 4 shows the head portion with the can opener in the operative condition,

Figure 5 shows the internal drive means of the can opener in the operative condition,

Figure 6 shows the front side of a can opener according to a second embodiment of the invention in an inoperative condition,

Figure 7 shows the internal drive means of the can opener Figure 6,

Figure 8 shows the drive means of the can opener in the inoperative position with a bevel-gear removed to show features there below,

Figure 9 shows the head portion of the can opener in the operative condition, and

Figure 10 shows the drive means of the can opener in the operative position.

Description of the Preferred Examples

[0026] The following description is given by way of example only to illustrate the invention and is not intended to limit the scope of use for functionality of the invention. In particular, the invention is not limited in its application to the details of construction and the arrangements of components set forth in the following description or illustrated in the accompanying drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used is for the purpose of description and should not be regarded as limiting.

[0027] Referring to the drawings, the present invention relates to a can opener having a body with a head portion 10 and a single handle member 11 extending from the head 10. The single handle 11 of the current invention is in contrast to many can openers in the art in which the handle comprises a pair of elongate handle elements pivotally connected so as to form "scissor" type handle arrangement. Can openers of the current invention do not have a handle that comprises a pair of pivotally connected elongate handle elements. As is known in the art a cutter blade 12 and traction wheel 13 are rotatable mounted with the body on or adjacent the head 10. The cutter blade 12 is a circular cutter wheel type blade that is rotationally mounted on an oblique shaft 37 such that its axis of rotation is inclined at an angle of between 5° and 8° to the axis of rotation of the traction wheel 13. The traction wheel 13 is of generally cylindrical configuration providing an outer face having a plurality of circumferen-

tially-spaced axially-extending teeth or serrations of substantially equal radius. The traction wheel 13 is coupled to a rotational operating element 14, 15 provided on one side of the can opener and supported by the head 10. The operating element 14, 15 is operable by a user of the can opener for turning the traction wheel 13 either directly where the traction wheel 13 and operating element are on ends of the same stub-shaft or indirectly via coupling gears 22, 23, 18, 19 located internally within the head 10. The operating element may be of various suitable types including, but not limited to, a butterfly-knob type element 14 or a crank-handle type element 15.

[0028] In various alternative embodiments of the invention in addition to being rotatably mounted one of the cutter blade 12 or traction wheel 13 is movable laterally with respect to the other between an inoperative position and an operative position. In the inoperative position the traction wheel 13 and the cutter blade 12 are spaced apart from each other by a distance or clearance D1 which is sufficient to accommodate a rim of a can to be opened being located between the traction wheel 13 and the cutter blade 12. In the operative position the distance or clearance between the traction wheel 13 and the cutter blade 12 is less than D1 such that both the traction wheel 13 and the cutter blade 12 engage the can for opening the can. The can opener may be either a rim cutting or end cutting type. In a rim cutting type the cutter blade 12 and traction wheel 13 are positioned in use either side of the can rim to cut an outer metal layer of the can rim to release the (top) end of the can. In the end cutting type the traction wheel 13 engages the rim or can wall while the cutter pierces and end (notionally the top end) of the can to cut the end out of the can.

[0029] The cutter blade 12 or traction wheel 13 is made laterally movable by rotationally mounting the blade or wheel on a shaft movable within a slotted journal or opening within the face of the head 10, or by rotatably mounting the blade or wheel to a lever or plate pivotally mounted to the face of the head, or by other suitable means. The cutter blade 12 or traction wheel 13 is biased in the inoperative position such that in an inactive state or prior to use the cutter blade 12 or traction wheel 13 are ready to receive the can between them without fiddling or adjusting by the user. Operation of the operating element 14, 15 by the user is also arranged to cause the cutter blade 12 or traction wheel 13 to move to the operative position as it rotates the traction wheel 13. An eccentric cam 30 is rotationally coupled with the traction wheel 13 such that as the traction wheel 13 is rotated by operation of the operating element 14, 15 the cam 30 is caused to rotate. A cam surface or cam-follower is arranged in contact with the cam 30 and translates rotational movement of the traction wheel 13 and cam 30 into lateral movement of the cutter blade 12 or traction wheel 13. Movement of the cutter blade 12 or traction wheel 13 from the inoperative position to the operative position is caused when the lobe 31 of the cam 30 is in contact with the cam surface or cam-follower. The cutter blade 12 or traction

wheel 13 is prevented from returning to the inoperative position during the rotational phase when the lobe 31 is out of contact with the cam surface or cam-follower by way of the bite of the can between the cutter and traction wheel 13 as the user continues to operate the operating element 14, 15 to cut the can rim or end. The biasing spring 20 is provided with sufficient strength to return the cutter blade 12 or traction wheel 13 to the inoperative position when the can rim or end of cut through or no can is engaged between the cutter blade 12 or traction wheel 13, but with insufficient spring strength to overcome the bite of the can between the cutter and traction wheel 13 during the can opening operation.

[0030] Figures 1 - 5 illustrate a first preferred embodiment of the invention. In this embodiment the can opener comprises a body having a head 10 and a handle 11 extending from the head 10. The cutter blade 12 is mounted with the body on or adjacent the head 10. An arcuate slot 16 is located in the face of the head 10 adjacent the cutter wheel. A shaft 17 is rotationally located within the slot 16 and is movable in a lateral direction within the slot 16. A traction wheel 13 is fixedly attached to a first end of the shaft 17 on the face of the head 10 so is to be movable between an inoperative position and an operative position with respect to the cutter blade 12. The second end of the shaft 17 located within the head 10. A cam 30 and a first traction wheel driving gear 18 are affixed to the second end of the shaft 17. Adjacent the cam 30 is an abutment 32 forming a cam surface against which the cam 30 contacts. The shaft 17 is biased in the inoperative position as shown in Figure 2 by a spring such as a spiral torsion spring or torsion spring 20. As the traction wheel rotates the cam lobe 31 contacts the cam surface 32 moving the shaft 17 and traction wheel 13 laterally within the arcuate slot 16 towards the cutter blade 12 to the operative position.

[0031] An operating handle 14 is located on the side of the head 10 and is engaged with a first bevel-gear 22 located within the head 10. The first bevel-gear 22 engages with a second bevel-gear 23 which in turn engages with an intermediary flat gear 19. The traction wheel gear 18 is engaged with the intermediate gear 19 such that rotation of the operating handle 14 transmits rotational movement to the traction wheel shaft 17 via the chain of gears 22, 23, 19 and 17. The first bevel-gear 22 has fewer teeth than a second bevel-gear 23 to provide a mechanical advantage for the operating handle 14.

[0032] The intermediate gear 19 is located on a rotational axis 21 that is located to be concentric with the arc-centre C of the arcuate slot 16. As the shaft 17 moves within the arcuate slot 16 the traction wheel gear 17 moves in an arc centred about the axis of rotation 21 of intermediate gear 19 and thus maintains a constant state of meshed engagement with intermediate gear 19 as shaft 17 moves laterally. In the preferred embodiment the shaft 17 moves through an arc of 25 and 30 degrees, although the arc may be larger or smaller. A larger arc causes the cutter and blade to move further apart makes

it more convenient to receive a can rim between the cutter and blade. An arc of 25 and 30 degrees reflects a compromise between convenience, cost and design constraints.

[0033] In the second preferred embodiment the traction wheel shaft 17 is rotatable about an axis that is perpendicular to a longitudinal axis 36 of the handle 11, and the operating element 14 is rotatable about an axis 35 that is perpendicular to the longitudinal axis 36 of the handle 11 and perpendicular to the axis of the traction wheel shaft 17.

[0034] Figures 6-10 illustrate a second embodiment of the invention. In this embodiment the can opener comprises of body having a head 10 and a handle 11 extending from the head 10. A traction wheel 13 is mounted on the face of the head 10 and is rotational by an operating handle 15 located on the side of the head 10 via a pair of engaging bevel-gears 22, 23. the first bevel-gear 22 is directly coupled to a shaft of the operating element 15. The second bevel-gear 23 is directly coupled with a shaft 24 mounting the traction wheel 13. The first bevel-gear 22 has fewer teeth and a second bevel-gear 23 providing a mechanical advantage to the operating element 15. A cam 30 is also engaged with the shaft 24 and is rotational with the traction wheel 13.

[0035] A cutter blade 13 is rotationally mounted on a pivoting plate 25 located on the face of the head 10. The plate pivots above the axis 26 through an arc of between 25 and 30 degrees, preferably 27.5 degrees, to move the cutter blade 13 from the inoperative position with respect to the traction wheel 13 and the operative position with respect to the traction wheel 13. The pivot shaft 26 extends through to the inside of the head 10. A cam-follower plate 33 is fixed to the pivot shaft 26 and pivots internally to the head 10 with the pivoting plate 25 to which the cutter blade 12 is mounted. A torsion spring 20 engages with the cam-follower plate 33 to bias the plate 33, and thus pivoting plate 25 and cutter blade 12, towards the inoperative position. The cam-follower plate 33 engages with the cam 30. During rotation of the cam the cam-lobe 31 moves the cam-follower 33 and thus pivot plate 25 and cutter blade 12 from the inoperative position to the operative position engaging a can rim between the blade 12 and traction wheel 13.

[0036] In the second preferred embodiment the traction wheel 13 is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis oblique to the longitudinal axis of the handle and perpendicular to the axis of the traction wheel.

[0037] Embodiments of the invention have been described, however it is understood that variations, improvements or modifications can take place without departure from the spirit of the invention or scope of the appended claims.

Claims

1. A can opener comprising:

a body having an head and a handle extending from the head.
a cutter blade mounted with the body on or adjacent the head,
a shaft located with the head,
a traction wheel provided at a first end of the shaft.
the shaft rotational about an axis and movable in a direction lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can.
an operating element on one side of the can opener and supported by the body.
drive means for coupling the operating element and shaft for rotating the shaft by operation of the operating element,
wherein the shaft is biased in the inoperative position and rotation of the shaft moves the shaft to the operative position.

2. The can opener of claim 1 further including a cam engagement surface and a cam located with the shaft, wherein rotation of the shaft engages the cam with the cam engagement surface thereby moving the shaft to the operative position.

3. The can opener of claim 1 wherein the shaft is positioned in an arcuate slot in the head and moves in an arc.

4. The can opener of claim 3 wherein the shaft moves in an arc of between 25 and 30 degrees.

5. The can opener of claim 3 wherein the drive means comprises a first gear driven by the operating element and a second gear located on the shaft and engaged with the first gear for rotation of the shaft, an axis of the first gear being located at a centre of the arc.

6. The can opener of claim 5 wherein the operating element is rotatable about an axis perpendicular to a rotational axis of shaft, the drive means further including a first bevel-gear coupled to the operating element and a second bevel-gear engaging the first bevel-gear and coupled to first gear.

7. The opener of claim 6 wherein said first bevel-gear has fewer teeth than the second bevel-gear, provid-

ing a mechanical advantage for said operating element.

8. The opener of claim 1 wherein the shaft is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis perpendicular to the longitudinal axis of the handle and perpendicular to the axis of the shaft. 5
9. The opener of claim 1 wherein the shaft is rotatable about an axis perpendicular to a longitudinal axis of the handle, and the operating element is rotatable about an axis oblique to the longitudinal axis of the handle and perpendicular to the axis of the shaft. 10 15
10. The opener of claim 1 wherein the cutter blade is rotationally mounted with the body on a cutter axis oblique to the axis of the shaft 20
11. A can opener comprising:
a body having an head and a handle extending from the head,
a cutter blade mounted with the body on or adjacent the head. 25
a traction wheel rotationally mounted with the head,
an operating element on one side of the can opener and supported by the body for rotating the traction wheel, 30
the cutter blade rotational about an axis and movable in a direction lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can, 35
wherein the cutter blade is biased in the inoperative position and rotation of the traction wheel moves the cutter blade to the operative position. 40
12. The can opener of claim 11 further including a cam rotational with the traction wheel and a cam-follower engageable with the cam for moving the cutter blade to the operative position. 45
13. A can opener comprising: 50
a body having an and a handle extending from the head.
a cutter blade mounted with the body on or adjacent the head, 55
a shaft located with the head,
a traction wheel provided at a first end of the shaft,

the shaft rotational about an axis and movable in an arc lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can.

an operating element on one side of the can opener and supported by the body.

drive means for coupling the operating element and shaft for rotating the shaft by operation of the operating element, the drive means comprises a first gear driven by the operating element and a second gear located on the shaft and engaged with the first gear for rotation of the shaft, an axis of the first gear being located at a centre of the arc.

wherein the shaft is biased in the inoperative position and rotation of the shaft moves the shaft to the operative position.

14. A can opener comprising:

a body having an head and a handle extending from the head,
a traction wheel rotationally mounted with the head,
a cam rotational with the traction wheel.
a cam-follower pivotally mounted with the body and engageable with the cam,
a cutter blade mounted with the cam-follower,
an operating element on one side of the can opener and supported by the body for rotating the traction wheel,
the cutter blade rotational about an axis and pivotal with the cam-follower in a direction lateral to the axis between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can.
wherein the cam-follower is biased in the inoperative position and rotation of the traction wheel moves the cam-follower and cutter blade to the operative position.

15. A can opener comprising:

a body having an head and a handle extending from the head,
a cutter blade mounted with the body on or adjacent the head.
a traction wheel mounted with the body on or adjacent the cutter blade, one of the cutter blade

or traction wheel being movable with respect to the other between an inoperative position in which the traction wheel and the cutter blade are spaced apart so that a rim of a can to be opened may be located between the traction wheel and the cutter blade and an operative position in which the traction wheel and the cutter blade engage a can for opening the can, an operating element operable by a user of the can opener for turning the traction wheel, and operation of the operating element moves the cutter blade and traction wheel from the inoperative position to the operative position.

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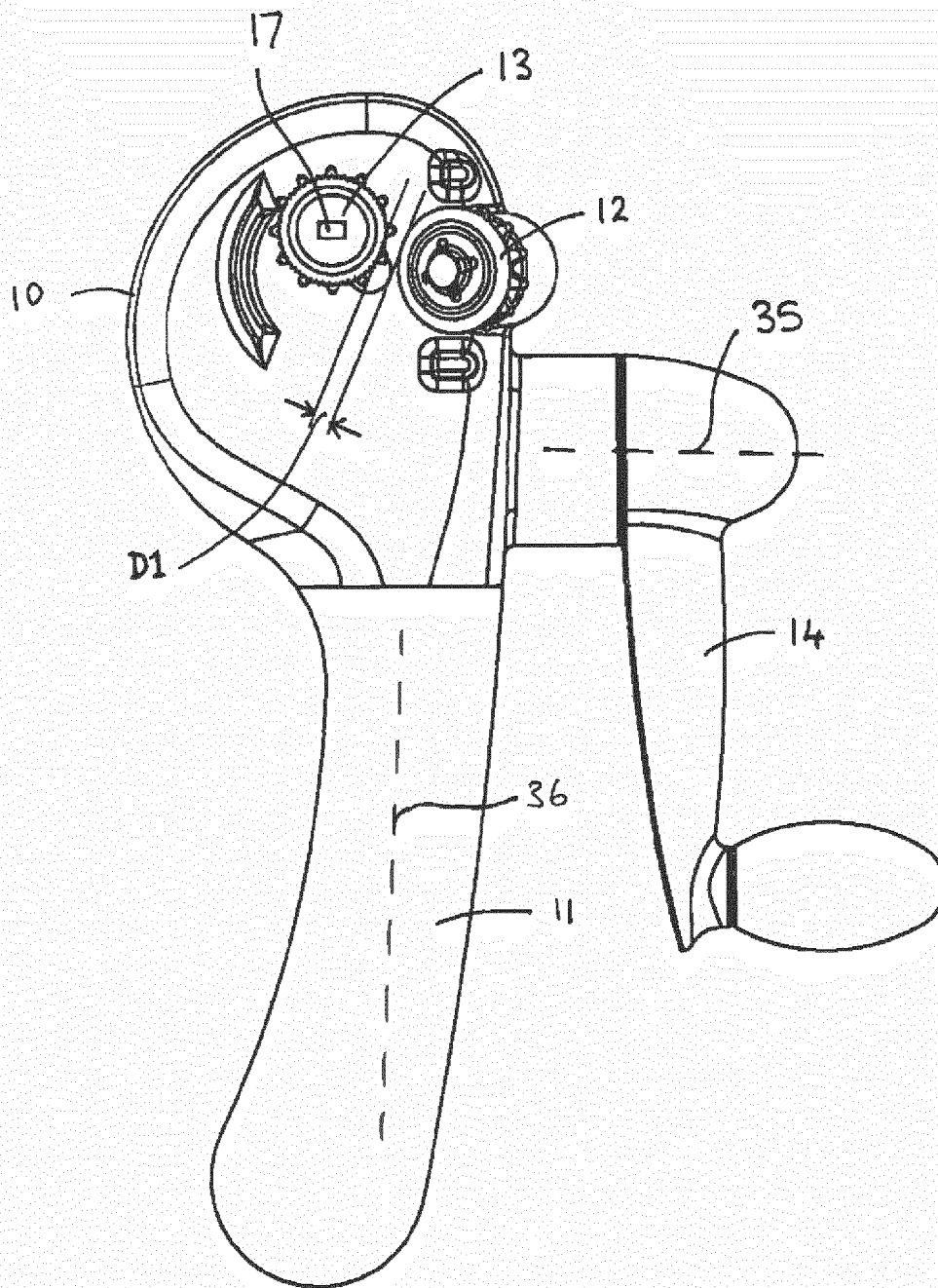


Figure 1

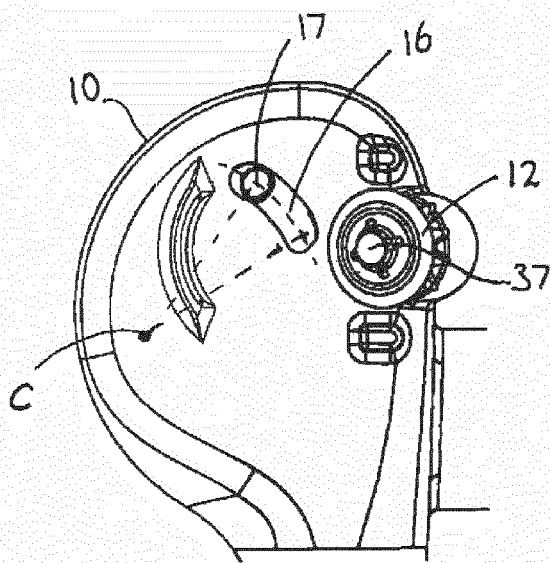


Figure 2

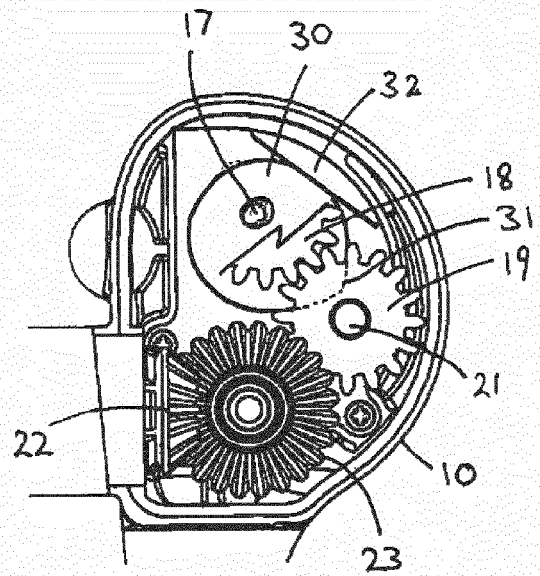


Figure 3

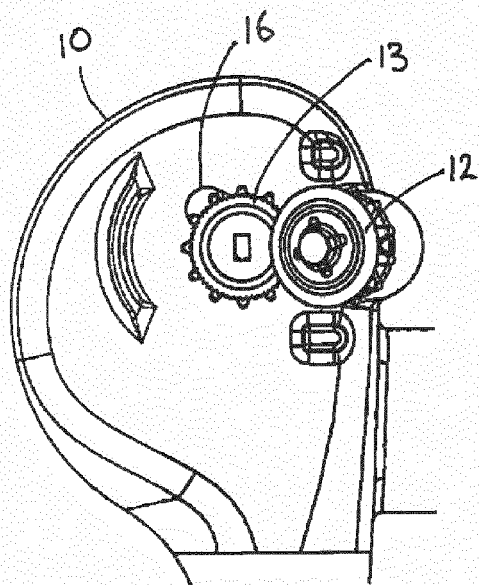


Figure 4

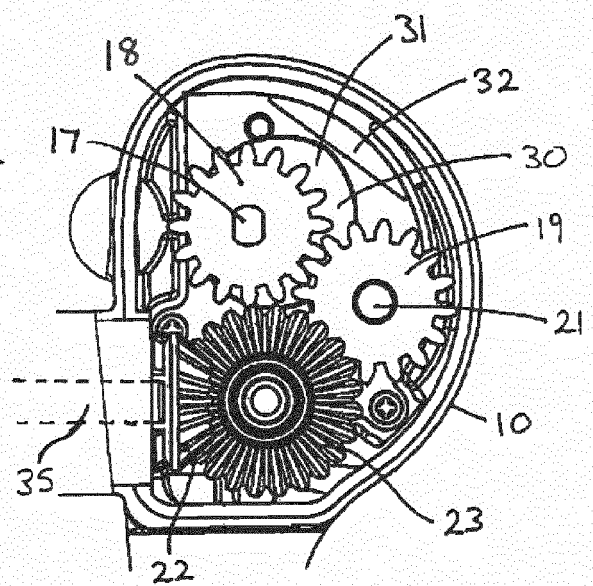


Figure 5

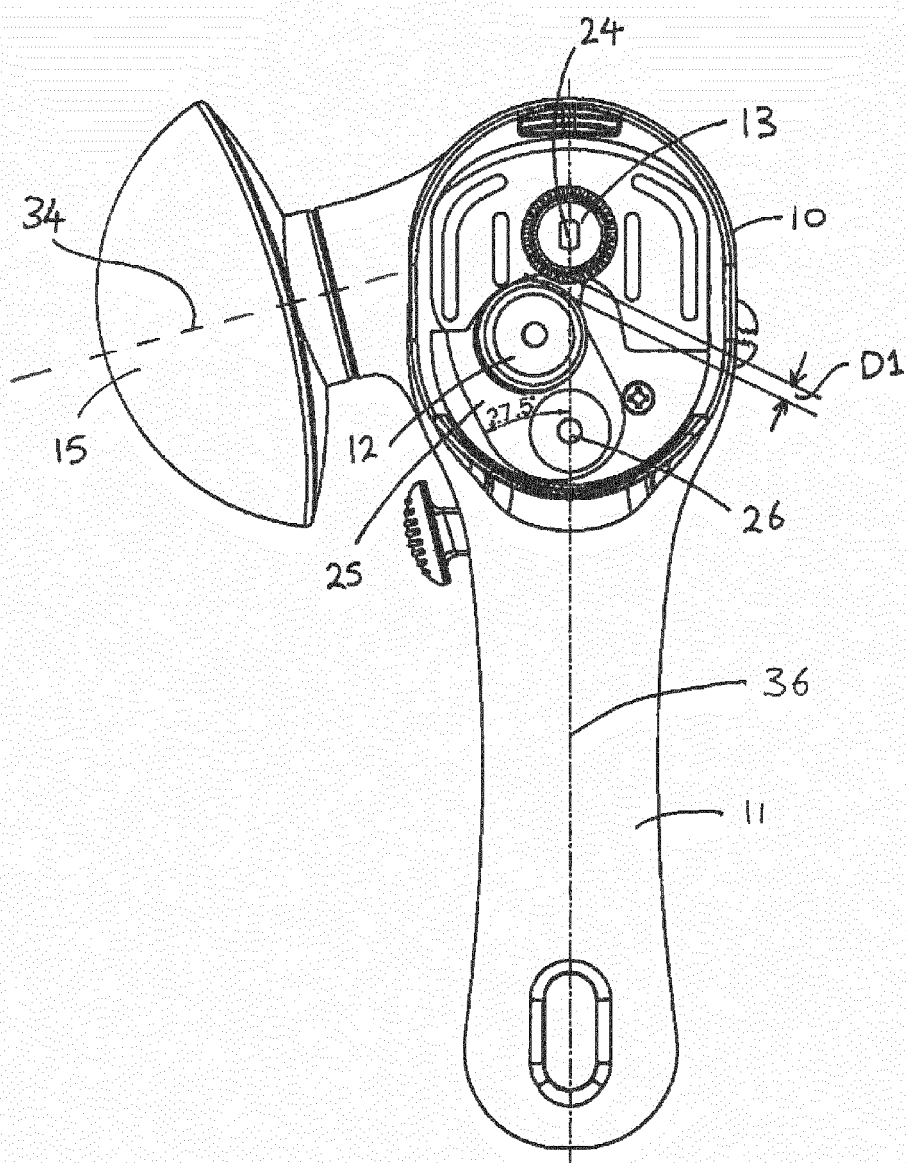


Figure 6

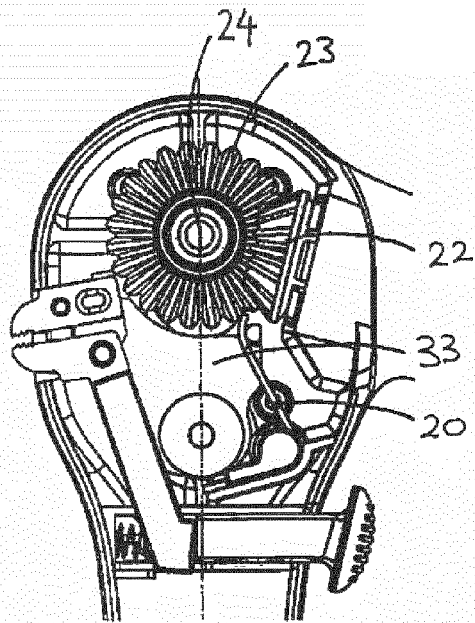


Figure 7

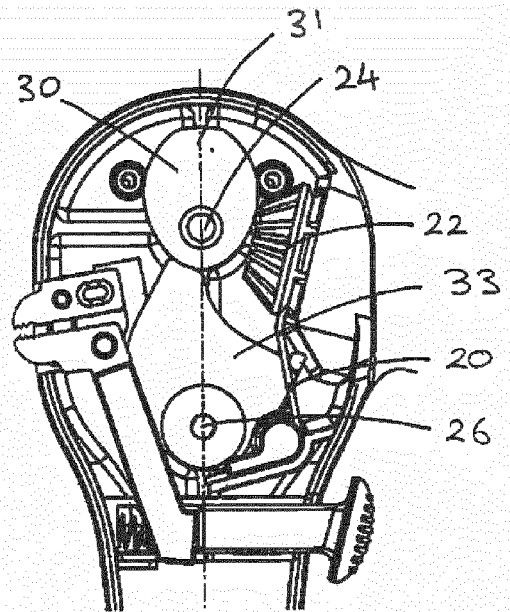


Figure 8

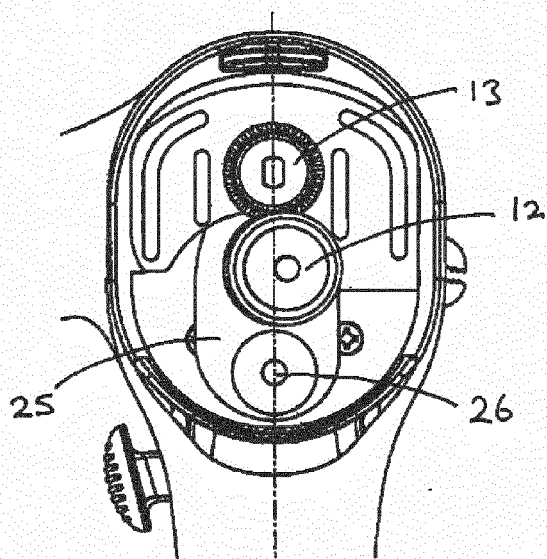


Figure 9

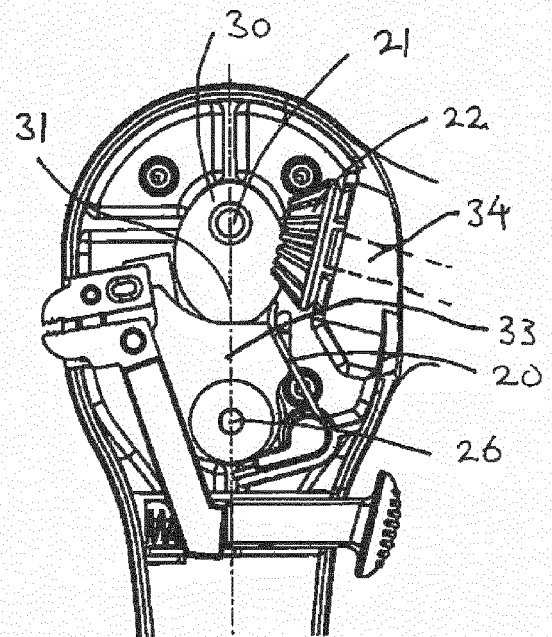


Figure 10

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

EP 12 17 4454

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	EP 1 657 214 A1 (UNION LUCKY IND LTD [CN]) 17 May 2006 (2006-05-17)	1-4,10	INV. B67B7/72 B67B7/74
Y	* figures 1-8 * * paragraphs [0020] - [0028] * * claim 3 *	8,9	
Y	----- US 2005/235501 A1 (SO SHUN [HK]) 27 October 2005 (2005-10-27) * figure 2 * * paragraphs [0025] - [0031] *	8,9	
X	----- GB 1 197 175 A (POVEY FRANK) 1 July 1970 (1970-07-01) * figures 1-5 * * page 1, line 43 - page 2, line 24 *	1,3,4,10	
			TECHNICAL FIELDS SEARCHED (IPC)
			B67B
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out. Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
The Hague		11 January 2013	Pardo, Ignacio
CATEGORY OF CITED DOCUMENTS		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	
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			

 1
EPO FORM 1503 03.82 (P04E07)



**INCOMPLETE SEARCH
SHEET C**

Application Number
EP 12 17 4454

Claim(s) completely searchable:
1-10

Claim(s) not searched:
11-15

Reason for the limitation of the search:

The search has been restricted to the subject-matter indicated by the applicant in his letter of 20th December 2012 filed in reply to the invitation pursuant to Rule 62a(1) and Rule 63(1) EPC, i.e. claim 1 and its dependent claims.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 17 4454

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.

11-01-2013

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