



(51) International Patent Classification:

A23N 7/02 (2006.01) A47J 17/14 (2006.01)

A47J 17/02 (2006.01) A47J 17/16 (2006.01)

A47J 17/04 (2006.01) A47J 17/18 (2006.01)

A47J 17/10 (2006.01)

(21) International Application Number:

PCT/US2020/051635

(22) International Filing Date:

18 September 2020 (18.09.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/903,191 20 September 2019 (20.09.2019) US

(71) Applicant: VIVID ROBOTICS, INC. [US/US];

3455 Thorndyke Ave W, Suite 204, Seattle, WA 98119 (US).

(72) Inventors: DE VITIS, Brian, Michael; 3455 Thorndyke

Ave W, Suite 204, Seattle, WA 98119 (US). REINECKE,

Kort, Edward; 3455 Thorndyke Ave W, Suite 204, Seattle,

WA 98119 (US). SCHACHT, Alexander, Clinton; 3455

Thorndyke Ave W, Suite 204, Seattle, WA 98119 (US).

SPADA, Nicholas, Alan Halverson; 3455 Thorndyke Ave W, Suite 204, Seattle, WA 98119 (US).

(74) Agent: CLOUTIER, Priya; Cloutier Arnold Jacobowitz PLLC, 2701 First Ave, Suite 200, Seattle, WA 98121 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

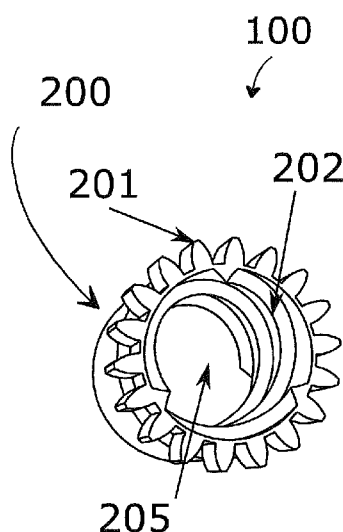
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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, 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,

(54) Title: FOODSTUFF FEEDING APPARATUS

Fig. 1



(57) Abstract: An objective of the invention is to provide an apparatus that can feed foodstuff into a food processor in a safe manner while producing uniform results and reducing food waste.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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FOODSTUFF FEEDING APPARATUS**CROSS-REFERENCES TO RELATED APPLICATIONS**

This application takes priority to US Provisional Application No. 62/903191 filed on September 20, 2019 and incorporates that application in its entirety herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

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Not Applicable

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

Not Applicable

BACKGROUND

15

The invention relates to an apparatus and method for feeding foodstuff into a food processor. Foodstuff may include, but is not limited to, food items such as meat, vegetables, or cheeses. Food processor refers to any machine that may dice, cut, shred other otherwise vary the size and/or appearance of foodstuff. Commercial kitchens commonly use a slicing machine, for example, to slice foodstuff uniformly. Here a worker feeds foodstuff into a slicing machine. This can be dangerous because the worker is required to be in proximity with sharp blades and other mechanical parts of the slicing machine. Some systems that feed foodstuff into slicing machines use conveyor belts. However, in those systems, foodstuff may not be sliced uniformly as the flow of foodstuff into the slicing machine is not controlled. In addition, foodstuff may not be fed in its entirety into the food processor causing food waste. There is a need for an apparatus that can feed foodstuff into a food processor in a safe manner while still producing uniform results and reducing food waste.

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BRIEF DESCRIPTION OF INVENTION

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An objective of the invention is to provide an apparatus that can feed foodstuff into a food processor in a safe manner while producing uniform results and reducing food waste.

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BRIEF DESCRIPTION OF THE DRAWINGS

10 Other features and advantages of the present invention will become apparent in the following detailed descriptions of the preferred embodiment with reference to the accompanying drawings:

Figure 1 is an embodiment of the apparatus;

Figure 2 is another embodiment of the apparatus;

15 Figure 3 is another embodiment of the apparatus;

Figure 4 is another embodiment of the apparatus;

Figure 5 is an exemplary method of the apparatus;

Figure 6 is a method for rotating the cylinder;

Figure 7 is a method for rotating the cylinder;

20 Figure 8 is a method for rotating the cylinder.

DETAILED DESCRIPTION OF THE INVENTION

In the following detailed description, reference is made to the accompanying drawings, which form a part hereof. In the drawings, the use of similar or the same symbols in different
25 drawings typically indicates similar or identical items, unless context dictates otherwise.

5 The illustrative embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented here.

 One skilled in the art will recognize that the herein described components (e.g., operations), devices, objects, and the discussion accompanying them are used as examples for
10 the sake of conceptual clarity and that various configuration modifications are contemplated. Consequently, as used herein, the specific exemplars set forth and the accompanying discussion are intended to be representative of their more general classes. In general, use of any specific exemplar is intended to be representative of its class, and the non-inclusion of specific components (e.g., operations), devices, and objects should not be taken as limiting.

15 The present application uses formal outline headings for clarity of presentation. However, it is to be understood that the outline headings are for presentation purposes, and that different types of subject matter may be discussed throughout the application (e.g., device(s)/structure(s) may be described under process(es)/operations heading(s) and/or process(es)/operations may be discussed under structure(s)/process(es) headings; and/or descriptions of single topics may span
20 two or more topic headings). Hence, the use of the formal outline headings is not intended to be in any way limiting. One skilled in the art will recognize that the term user, may refer to a person, machine, or any other method of performing the described action.

 The invention described herein is a foodstuff feeding apparatus (100); and methods for providing foodstuff to a food processing machine.

25 Referring to Fig. 1- Fig. 4, in an embodiment, the foodstuff feeding apparatus (100) approximates a cylinder (200) having a cavity (205). The cavity (205) defines approximately helical threads (202). The helical threads (202) maybe tuned (dull -sharp) to provide an

5 acceptable grip on foodstuff. The helical design of the thread (202) allows foodstuff (500) to move through the foodstuff feeding apparatus (100) as it rotates. At least a portion of the outer surface of the cylinder (200) is comprised of protrusions (201). In an embodiment, the protrusions (201) resemble cogs in a gearing system. In an embodiment, the radius of the cylinder (200) is adjustable to accommodate foodstuff of varying sizes.

10 Referring to Fig. 3, in an embodiment, the foodstuff feeding apparatus (100) is further comprises a timing belt (400) that is operably connected to the protrusions (201). The timing belt (400) is operably connected to a motor (not shown) such that the timing belt (400) and the cylinder (200) rotate when the motor activates. In an embodiment, there is a gear (203) which operably connects the timing belt (400) to the protrusions (201). In another embodiment, the gear
15 (203) is operably connected to a crank (not shown). Referring to Figure 1, in another embodiment, the foodstuff feeding apparatus (100) is operably connected to a direct drive motor (not shown).

Referring to Fig. 2, in another embodiment the food stuff feeding apparatus (100) is arranged so that the protrusions (201) align with the teeth of the gear (203). According to an
20 embodiment, the foodstuff feeding apparatus (100) and the gear (203) are arranged in housing (102). According to an embodiment, the foodstuff feeding apparatus (100) and gear (203) are independently removable from the housing (102).

Referring to Fig. 6, according to a method, the motor is activated (601) causing the timing belt (400) to rotate the foodstuff feeding apparatus (602). Referring to Fig. 7, in an
25 exemplary method, the crank is turned (701) causing the gear (203) to rotate the foodstuff feeding apparatus (702). Referring to Fig. 8, according to a method, the direct drive motor is activated (801) causing the foodstuff feeding apparatus to rotate (802). As the foodstuff feeding

5 apparatus (100) rotates, foodstuff is passed through the cavity (205) and delivered to a food processor.

Referring to Figs. 4 and 5, in an exemplary method, foodstuff (500) is associated with the foodstuff feeding apparatus (100) by inserting foodstuff into the cavity (205) (501). the foodstuff feeding apparatus (100) is rotated (502) by any of the methods described above or
10 other equivalent or similar methods. As the foodstuff feeding apparatus rotates, the thread (202) grips the foodstuff (500) moving the foodstuff through the cavity (205) (503). When a portion of the foodstuff (500) extends beyond the cavity (205), the extended portion of foodstuff (500) engages with a food processor (504). In an exemplary method, the rate at which foodstuff (500) moves through the foodstuff feeding apparatus (100) controls the thickness of the of foodstuff
15 (500) that is delivered to the food processor.

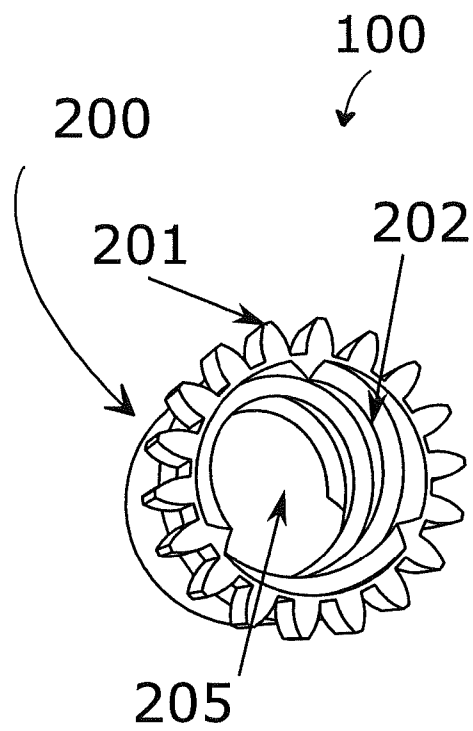
CLAIMS

We claim as our invention:

1. A foodstuff feeding apparatus that approximates a cylinder; wherein the cylinder defines a cavity that defines approximately helical threads; wherein at least a portion of the outer surface of the cylinder is comprised of protrusions.
2. The apparatus of claim 1 where the cylinder is radially adjustable.
3. The apparatus of claim 1 wherein the protrusions are cogs and further comprising a gear having cogs; wherein the cogs of the gear and the cogs of the apparatus align.
4. The apparatus of claim 3 wherein the gear is in communication with a motor or crank rotating the apparatus.
5. The apparatus of claim 4 further comprising a means to prevent foodstuff from rotating.
6. The apparatus of claim 1 where the helical treads are tuned (dull to sharp) to provide an acceptable grip on foodstuff.
7. A method to use a foodstuff feeding apparatus where:
the foodstuff feeding apparatus approximates a cylinder; wherein the cylinder defines a cavity that defines approximately helical, sharpened threads; wherein at least a portion of the outer surface of the cylinder is comprised of protrusions;
where the method comprises associating foodstuff with the cavity.

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Fig. 1



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Fig. 2

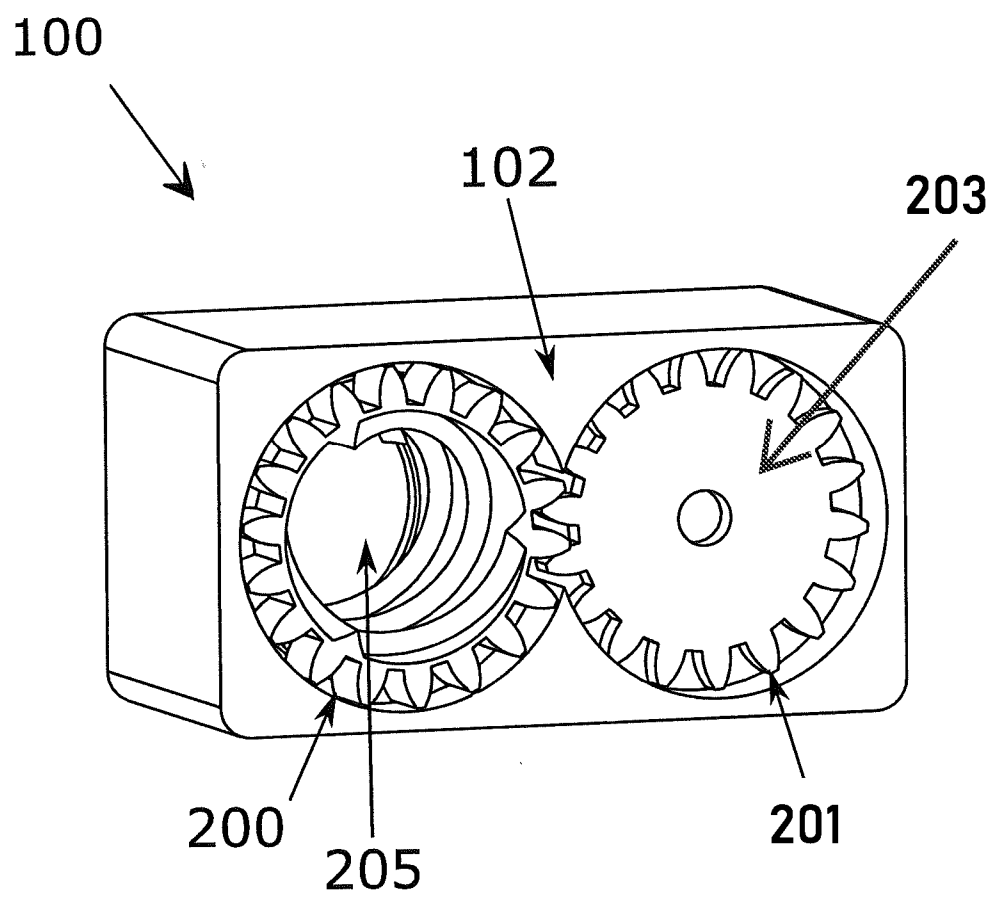


Fig. 3

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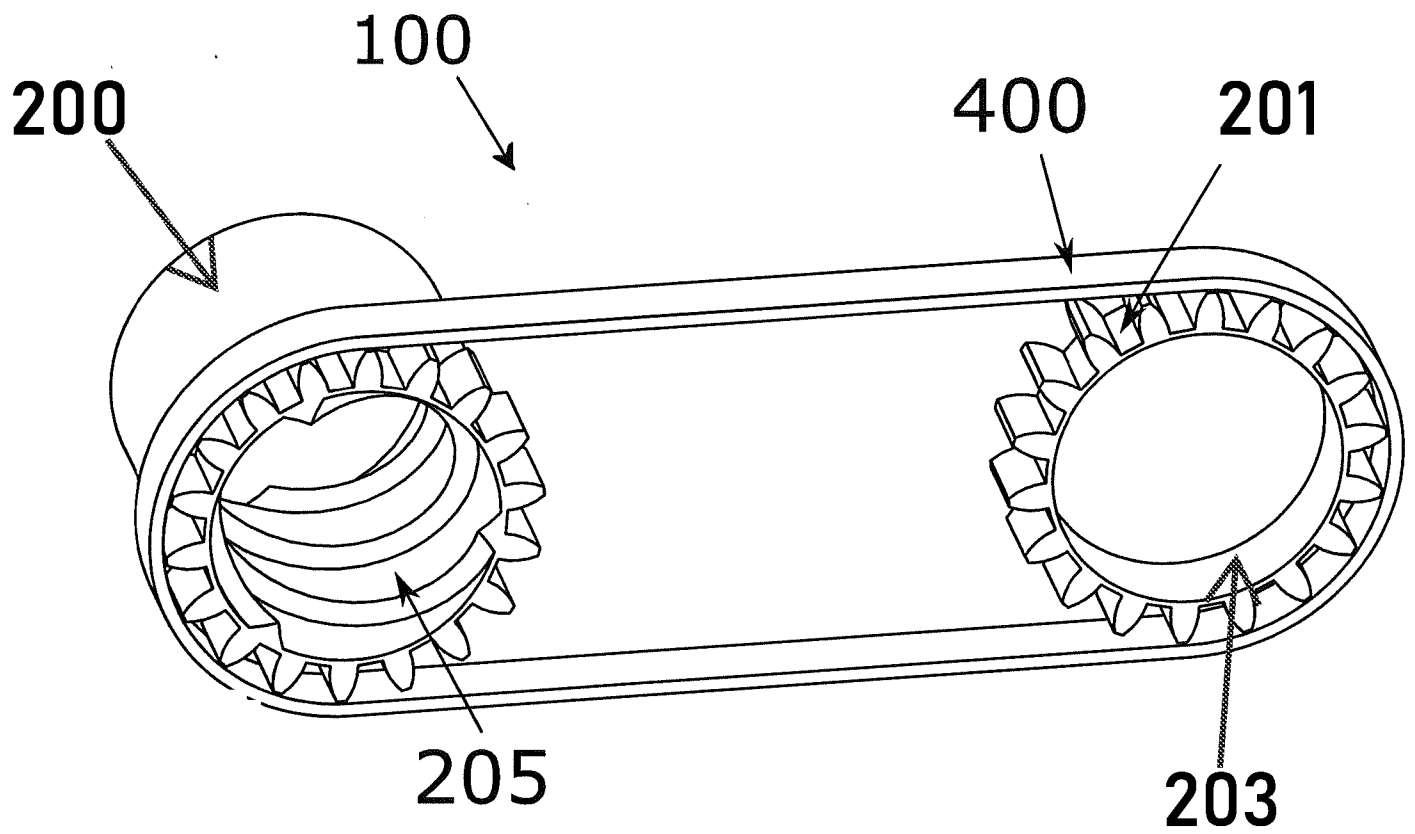
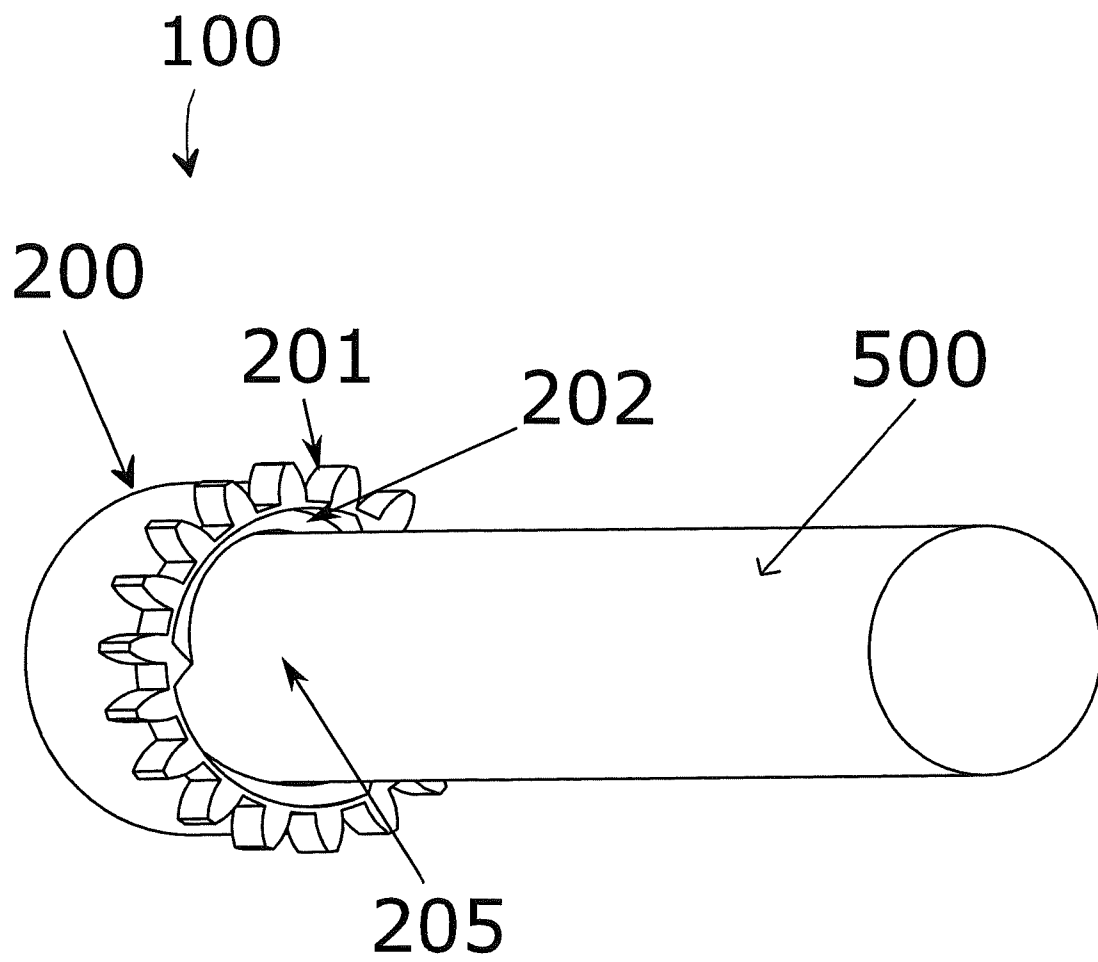


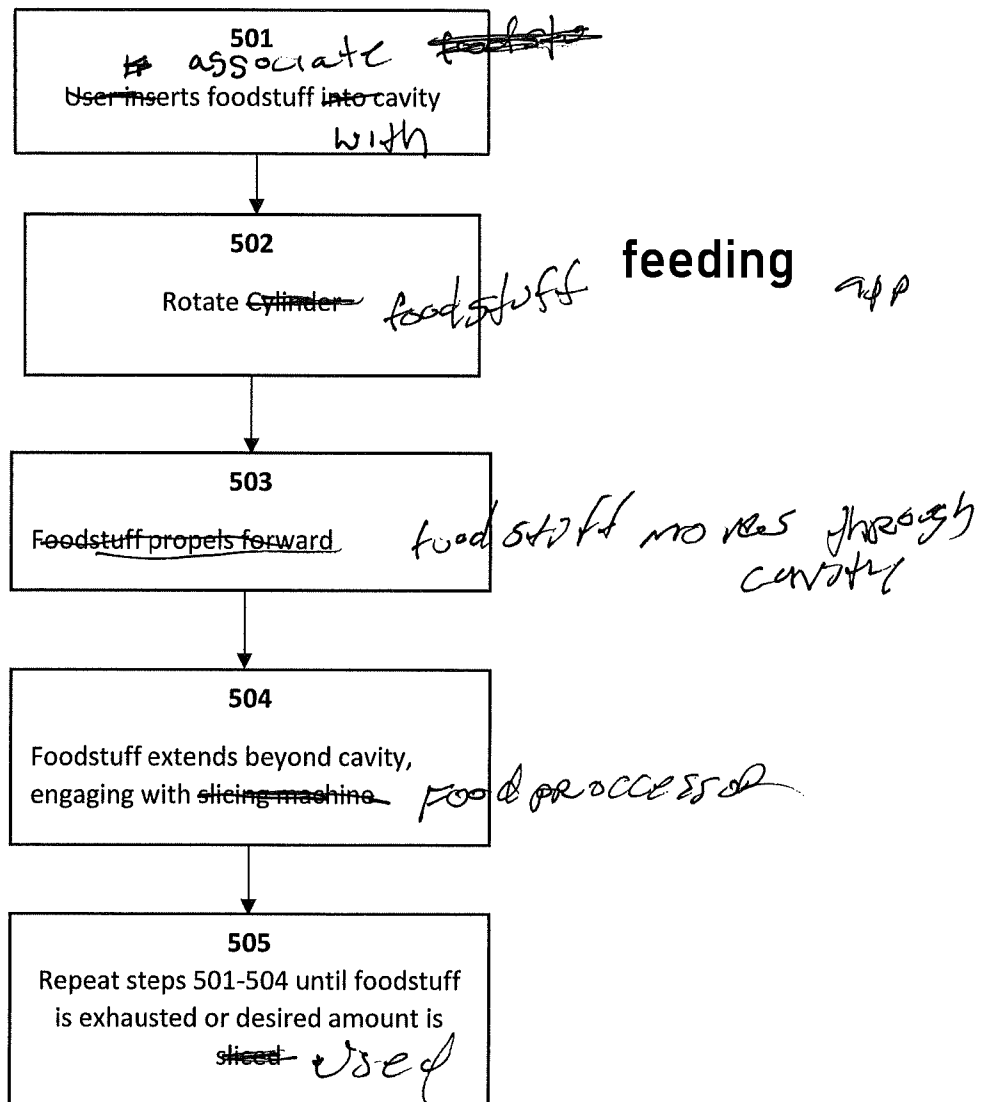
Fig. 4

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Figure 5



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Figure 6

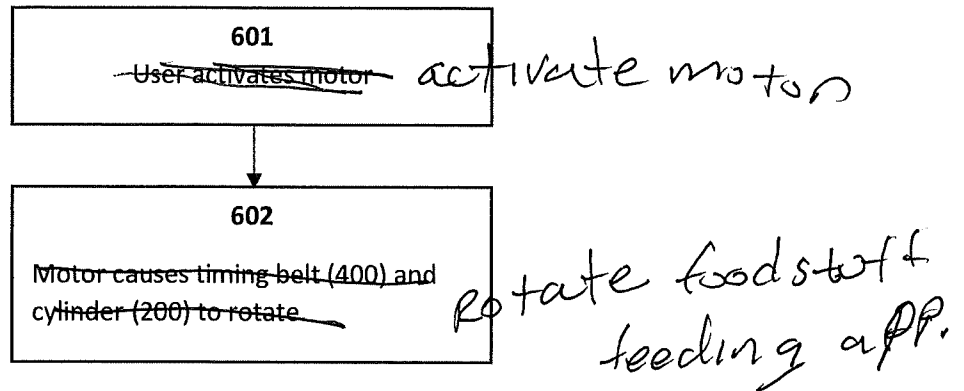


Figure 7

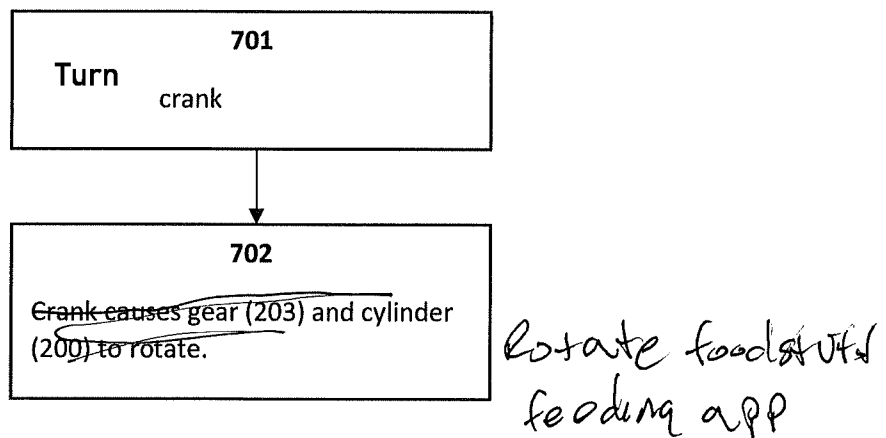
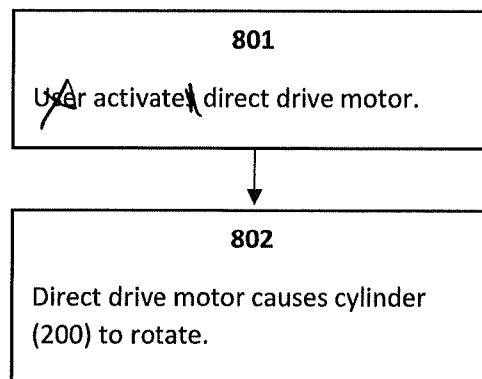


Figure 8



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US20/51635

A. CLASSIFICATION OF SUBJECT MATTER

IPC - A23N 7/02; A47J 17/02; A47J 17/04; A47J 17/10; A47J 17/14; A47J 17/16; A47J 17/18 (2020.01)

CPC - A23N 7/026; A22C 9/005; A23N 7/02; A47J 17/02; A47J 17/04; A47J 17/10; A47J 17/14; A47J 17/16; A47J 17/18; B26D 2210/02

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)

See Search History document

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

See Search History document

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

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 201234855 Y (XINRAN SU) 13 May 2009; see machine translation	1, 3-7
X	US 5,514,030 A (SUHNER BEAT) 07 May 1996; figure 1; column 3, lines 5-10	1, 3-4
X	US 3,777,356 A (HEMINGWAY J) 11 December 1973; abstract; figures 1-3, 5; column 2, lines 35-40	1-2
A	US 5,104,232 A (LENNOX III JOHN M) 14 April 1992; entire document	1-7
A	GB 1087550 A (REPUBLIC OF FRANCE) 18 October 1967; entire document	1-7

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

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Date of the actual completion of the international search

04 January 2021 (04.01.2021)

Date of mailing of the international search report

02 FEB 2021

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Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Authorized officer

Shane Thomas

Telephone No. PCT Helpdesk: 571-272-4300