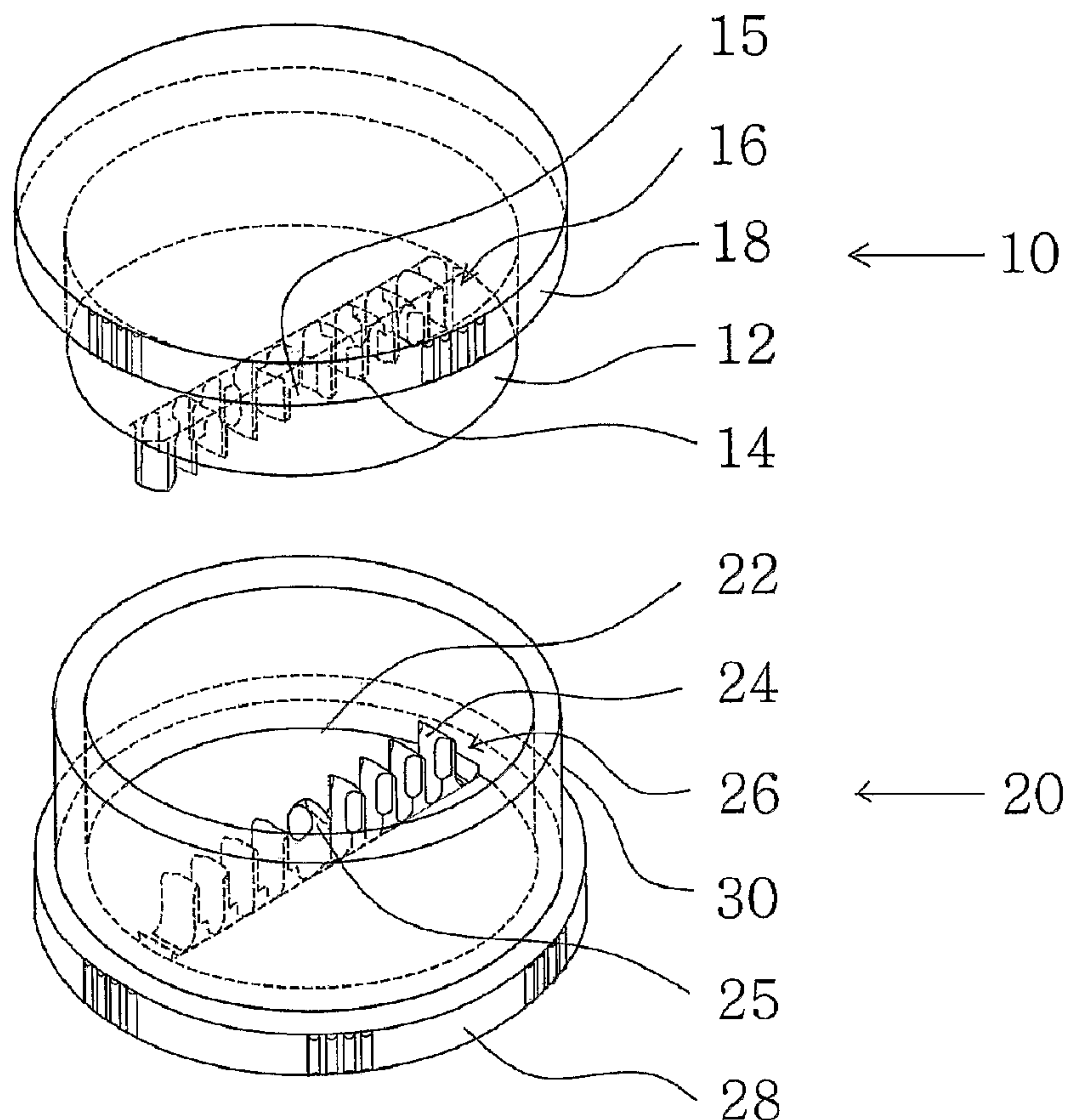




(86) Date de dépôt PCT/PCT Filing Date: 2003/01/21
(87) Date publication PCT/PCT Publication Date: 2004/08/12
(45) Date de délivrance/Issue Date: 2009/11/24
(85) Entrée phase nationale/National Entry: 2005/02/15
(86) N° demande PCT/PCT Application No.: US 2003/001724
(87) N° publication PCT/PCT Publication No.: 2004/066798

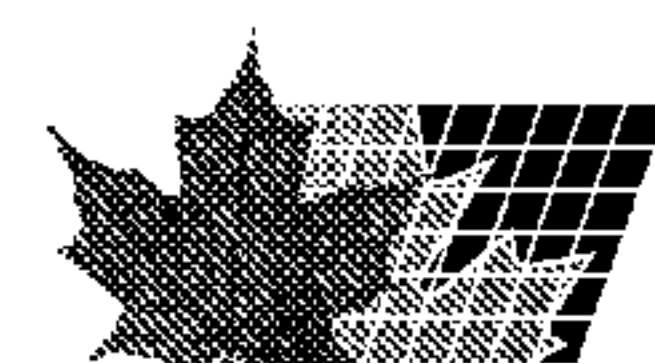
(51) Cl.Int./Int.Cl. *A47J 42/04* (2006.01),
A47J 42/34 (2006.01)
(72) Inventeur/Inventor:
TENG, ERIC, US
(73) Propriétaire/Owner:
TENG, ERIC, US
(74) Agent: SMART & BIGGAR

(54) Titre : PRESSE-AIL ROTATIF DE CUISINE
(54) Title: ROTARY KITCHEN GARLIC TOOL



(57) Abrégé/Abstract:

In accordance with the present invention an innovative garlic tool consists of a set of two disc-shaped presser units (10, 20) having respective male and female rotary grating means (14, 24) comprising a row of protruding grater elements each. Unpeeled garlic



(57) **Abrégé(suite)/Abstract(continued):**

cloves can be crush-peeled and then be grated by hand-applied counter-twisting. Processing can be precisely controlled by continuous visual monitoring and repeated grating to achieve optimal bit size and texture. This device is truly remarkable in its complete functionality, and in its simple, compact, and elegant two piece form-follows-function design.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 August 2004 (12.08.2004)

PCT

(10) International Publication Number
WO 2004/066798 A1

(51) International Patent Classification⁷: **A47J 42/04**

SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/US2003/001724

(22) International Filing Date: 21 January 2003 (21.01.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant and

(72) Inventor: **TENG, Eric** [US/US]; 12089 Gold Pointe Lane,
Gold River, CA 95670 (US).

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

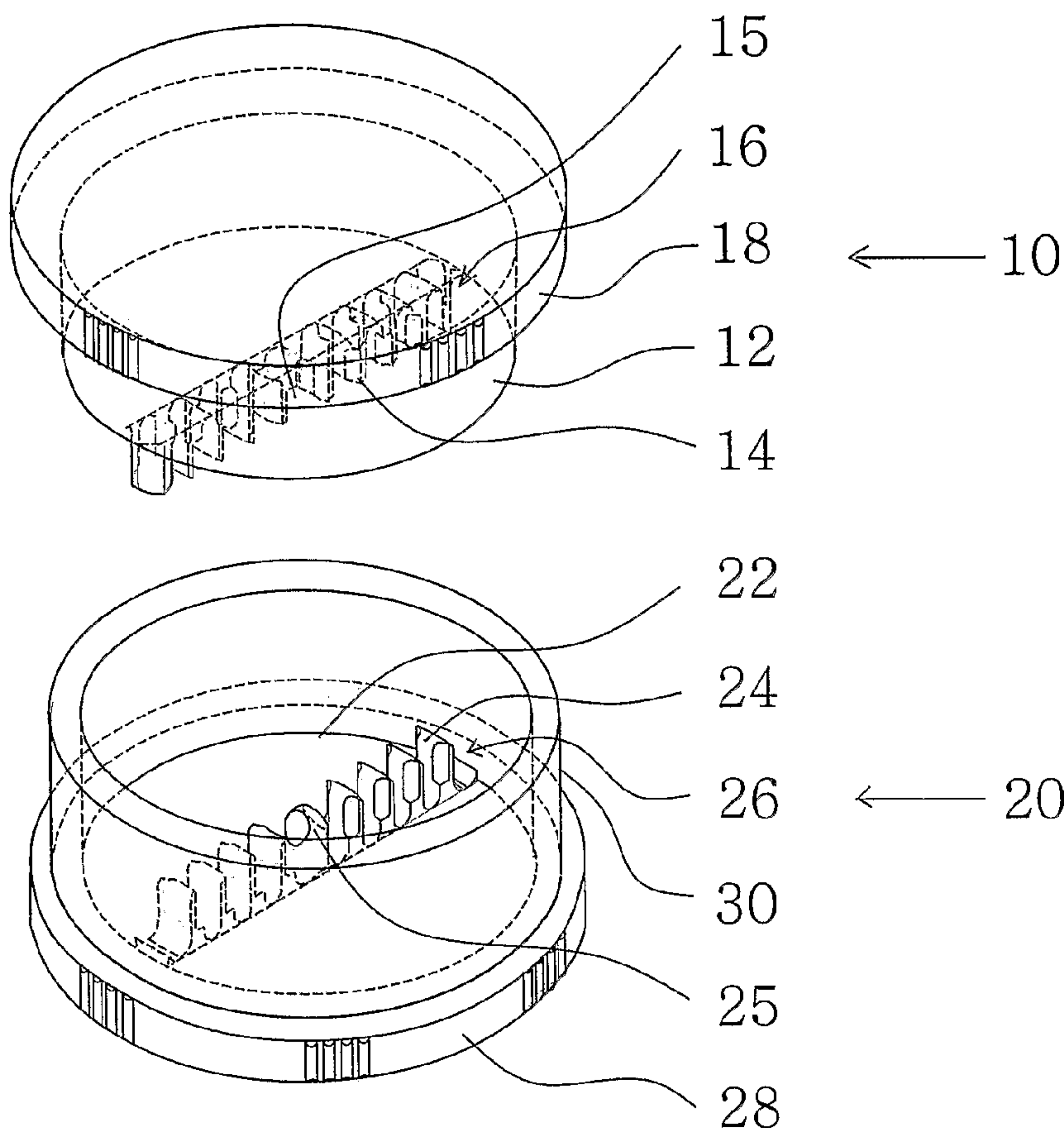
— *with international search report*

— *with amended claims and statement*

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ROTARY KITCHEN GARLIC TOOL



(57) Abstract: In accordance with the present invention an innovative garlic tool consists of a set of two disc-shaped presser units (10, 20) having respective male and female rotary grating means (14, 24) comprising a row of protruding grater elements each. Unpeeled garlic cloves can be crush-peeled and then be grated by hand-applied counter-twisting. Processing can be precisely controlled by continuous visual monitoring and repeated grating to achieve optimal bit size and texture. This device is truly remarkable in its complete functionality, and in its simple, compact, and elegant two piece form-follows-function design.

WO 2004/066798 A1

TITLE: ROTARY KITCHEN GARLIC TOOL

BACKGROUND - FIELD OF INVENTION

The present invention pertains to a kitchen utensil used in the preparation of garlic for cooking. Specifically, it relates to the common kitchen garlic press.

BACKGROUND - DESCRIPTION OF PRIOR ART

A common kitchen garlic press is constructed of a garlic chamber with a perforated sieve member in the bottom located near a hinge which joints two lever arms. The top lever arm operates a plunger which moves vertically within the chamber to squeeze garlic through the perforations. There are numerous existing patents for this type of garlic press with each one a minor variation of this fundamental design. Examples of these can be found in Lackie USP 5,370,044, Gibson USP 5,463,941, and Laib USP 5,467,699.

In this type of garlic press, each clove of garlic should first be pre-peeled to avoid the peelings blocking the perforations. Then substantial pressure is required to force the closing of the two levers to squeeze on the clove of garlic.

There are several commonly recognized problems with garlic tools of this design:

- 1) Difficulty in use – requires pre-peeling of garlic cloves and strong wrist strength in pressing;

- 2) Substantial wastage – garlic bits remain in the chamber and perforations;
- 3) Pulverized garlic bits – may not be desirable for the intended use;
- 4) Difficulty in Cleaning – compressed garlic bits tend to get stuck in perforations and crevices.
- 5) Inadvertent garlic juice spray

There are several garlic tools on the market that attempt to alleviate the problem of difficult garlic pressing by having longer and bigger lever arms or with soft handles. Petronelli US 4,582,265 presented a somewhat different approach by having a rotatable plunger with patterns on the plunger surface so that the garlic clove can be ground into finer particles before forced out of the perforations on the sieve member. Other existing patents specifically attempt to deal with the very real and undesirable cleaning problem by providing special cleaning device, or special non-stick surface such as presented by Ancona USP 5,520,104, Short et al. USP 6,237,474 and Moor USP 5,513,562, etc.

Such extraordinary efforts at improvement, however, only succeed at best in alleviating some of the noted disadvantages. So long as a garlic press retains the traditional two-lever, perforated sieve chamber design, all of the above-mentioned five problems clearly remain, if to a varying degree.

Other inventors also recognize such problems and attempts were made to design garlic tools that can overcome such shortcomings. These following patents, Repac and Culig USP 5,947,016, Bigelow et al USP 6,244,529, Holcomb US 4537123, a UK design patent 2039383, and an Australian reg.des. No.114662 (also registered as UK reg. Des. No. 2,013,169) presented different cutters or graters that do not follow the traditional two lever, perforated sieve chamber design. Although such devices appear to be satisfactory for their designed purposes, since the devices have many separate parts, they are unnecessarily bulky, complicated, slow to operate, and have high production costs.

The above mentioned types of utensils tools represent almost all of the known kitchen garlic tools or the garlic presses. A common feature among all of them is that the processed garlic is forced to pass through multiple perforations on either a grater plate with raised tiny sharp cutting edges, or through a sieve member.

A different class of kitchen utensil that is not designed specifically for garlic preparation but nevertheless can be used for such purpose is the kitchen chopper. This can be in the shape of a cylindrical container about the size of a beaker having a vertically traveling member with attached cutter blades at its bottom. The traveling member is held up as its normal resting position by a spring means. The vertically traveling member can be pressed down by hand chopping the material resting on the bottom of the container into fine bits. Another popular kitchen chopper most commonly used to prepare salsa has a pair of rotating blades inside a container. The material resting on the bottom is chopped up by cranking a handle on the top of the container rotating the chopping blades.

The main problem of using such kitchen choppers for garlic preparation is that they occupy a large space, they contain many parts and are expensive, and processed garlic bits are difficult to gather etc. Simply put, they represent unwarranted overkill for the purpose of garlic preparation, with a result that is less than satisfactory.

A survey of the available cookbooks reveals that few cook book authors advocate the use of the commonly available garlic presses for garlic preparation presumably because of the problems previously mentioned. But instead, they provide detail instructions in how to properly prepare garlic cloves by using a kitchen knife, or pre-boiling, or pre-baking of the garlic clove. Unfortunately, all such efforts are either complicated, requiring much skill and practice; or are slow and inefficient. All in all, garlic preparation in the kitchen has always been a slow, difficult, unpleasant, and daunting task.

Lastly, other than prior arts in garlic preparation devices, reference is also made to the following two existing patents because of some features they have in common with the present invention: W. H. Wingfield USP 795,746 presents a tobacco grinder that has cutting elements arranged in concentric circles over the grinding surface on each half, and M. D. Conte USP 3,581,790 has a drive-shaft driving grinding surfaces used in grinding of cheese.

FEATURES AND ADVANTAGES

The present invention may provide a tool that would peel, press, and grate garlic or other edibles such as ginger, herbs, medical pills etc. with minimal effort.

The present invention may provide a tool that can efficiently accomplish said functions with negligible wastage, and is easy to clean.

The present invention may provide a tool that is simple, compact and esthetically- pleasing, besides being highly functional.

Additional advantages from a manufacturer's standpoint may include: a highly innovative product that may be far superior to other competitive products on the market and may be extremely simple and economical to produce.

The invention accordingly comprise the device possessing the features, properties, and the relation of components which are exemplified in the following detailed disclosure and the scope of the application of which will be indicated in the appended claims.

For a fuller understanding of the nature and objects of the invention reference should be made to the following detailed description, taken in the accompanying drawings.

BRIEF SUMMARY OF THE INVENTION

In accordance with one aspect of the invention, there is provided an apparatus for processing edible substances. The apparatus includes a first processing unit including a grater having a circular surface, and a first plurality of spaced-apart grater elements projecting from the circular surface of the grater generally along a plurality of radii of the circular surface of the grater. The apparatus also includes a second processing unit including a receptacle operably configured to receive the grater in rotatable engagement therewith, and having a circular inner surface, and a second plurality of spaced-apart grater elements projecting from the circular inner surface of the receptacle generally along a plurality of radii of the circular inner surface of the receptacle. The grater and the receptacle are operably configured to define at least two but no more than three generally circular sector regions free of grater elements when the grater is received in the receptacle and when the first and second pluralities of spaced-apart grater elements are aligned.

The grater may include a protuberant grater.

The receptacle may include a circular receptacle.

The first plurality of spaced-apart grater elements may project from the circular surface of the grater generally along two radii of the circular surface of the grater separated by 180° , the second plurality of spaced-apart grater elements may project from the circular inner surface of the receptacle generally along two radii of the circular inner surface of the receptacle separated by 180° , and the grater and the receptacle may be operably configured to define a generally semi-circular region free of grater elements when the grater is received in the receptacle and the first plurality of spaced-apart grater elements and when the second plurality of spaced-apart grater elements are aligned.

The first plurality of spaced-apart grater elements may project from the circular surface of the grater generally along three radii of the circular surface of the grater separated by 120° , the second plurality of spaced-apart grater elements may project from the circular inner surface of the receptacle generally along three radii of the circular inner surface of the receptacle separated by 120° .

The first plurality of grater elements and the second plurality of grater elements may be operably configured to be intermingled when the grater is received in the receptacle and when the first plurality of grater elements and the second plurality of grater elements are aligned.

The first processing unit and the second processing unit may be sized to fit in a human hand.

The first processing unit may include a first gripping edge extending wider than an external width of the receptacle, and the second processing unit may further include a second gripping edge extending wider than the external width of the receptacle.

The first processing unit and the second processing unit may be made of transparent plastic.

The first plurality of spaced-apart grater elements may define a center void, and the second plurality of spaced-apart grater elements may further include a center nipple operably configured to be received in the center void.

5 The grater elements may include relatively sharp cutting edges.

The first plurality of spaced-apart grater elements may be an integral part of the first processing unit, and the second plurality of spaced-apart grater elements may be an integral part of the second processing unit.

10

The first plurality of spaced-apart grater elements and second plurality of spaced-apart grater elements may be made of metal.

15

In accordance with another aspect of the invention, there is provided an apparatus for processing of edible substance. The apparatus includes a first mating circular processing unit having a first row of a plurality of spaced apart mincing teeth and a first circular mincing surface, the first row of mincing teeth being disposed substantially along a diameter of the first mincing surface. The apparatus also includes a second mating circular processing unit having a second row of a plurality of spaced apart mincing teeth and a second circular mincing surface, the second row of mincing teeth being disposed substantially along a diameter of the second mincing surface. The first and second row of mincing teeth are configured to cross-cut without interference with each other when the first and second mating circular processing units are set to mate and are counter-twisted against each other, and the first and second mating circular processing units are operably configured to define a generally semi-circular region free of grater elements when the first and second mating circular processing units are set to mate and when the first and second row of mincing teeth are aligned.

20

25

30

In accordance with another aspect of the invention, there is provided a palm-sized rotary kitchen tool of at least two pieces suitable for processing of garlic. The palm-sized rotary kitchen tool includes male and female presser units that are configured to be joined in a mating relationship that supports rotary movement of the male presser unit within the female presser unit and defines a cylindrical grating chamber of sufficient volume to retain at least one garlic clove therein when the male presser unit is fully received within the female presser unit. The male and female presser units include respective grating teeth that are configured to define a plurality of substantially equivalent volumes being free of grating teeth when the respective grating teeth of the male and female presser units are aligned to each other. The female presser unit includes a circular receptacle. A circumference of the grating chamber is equivalent to an inner circumference of the circular receptacle. The male presser unit further includes a gripping edge having its width being wider than an outer width of the circular receptacle, and the circular receptacle abuts the gripping edge when the male presser unit is fully received within the female presser unit.

35

40

45

In accordance with another aspect of the invention, there is provided a palm-sized rotary kitchen tool of at least two pieces suitable for processing of garlic. The palm-sized rotary kitchen tool includes male and female presser units that are configured to be joined in a mating relationship that supports rotary movement of the male presser

unit within the female presser unit and defines a cylindrical grating chamber of sufficient volume to retain at least one garlic clove therein when the male presser unit is fully received within the female presser unit. The male and female presser units include respective grating teeth that are configured to define a plurality of substantially equivalent volumes being free of grating teeth when the respective grating teeth of the male and female presser units are aligned to each other. The male presser unit includes a cylindrically shaped protuberant rotary grating member having a circular face thereon, and the grating teeth on the male presser unit are spaced apart in a single row on the circular face and span a diameter of the circular face.

The female presser unit may include a cylindrical shaped sunken receptacle having a circular bottom thereon, and the grating teeth on the female presser unit may be spaced apart in a single row on the circular bottom and span a diameter of the circular bottom.

The number of grating teeth on the male presser unit may differ from the number of grating teeth on the female presser unit by one, and the grating teeth may further include one central protruding element.

BRIEF DESCRIPTION OF THE FIGURES

- FIG. 1 Perspective view of a preferred embodiment of the garlic tool according to the invention
- FIG. 2 Side cross-sectional view showing the relative positioning of the *intermingled* (or interlocked) grater element rows when they are in alignment
- FIG. 3 Top schematic view showing the relative positioning of the grater element rows not being in alignment, and the locus of the grater elements

DETAILED DESCRIPTION OF THE INVENTION (PREFERRED EMBODIMENT)

(Henceforth, the words "grating" and "mincing", and their respective derived terms carry the same meaning and are intended to be used interchangeably throughout this application while the word "processing" is used as a general term to describe preparing the garlic for cooking.)

A typical and preferred embodiment of the garlic tool of this invention is illustrated in FIG. 1. A two-piece set of garlic utensil tool is constructed of a suitable material sufficiently hard to press and grate a clove of fresh garlic without permanent deformation such as plastic, metal, ceramic, glass etc. A transparent plastic such as polycarbonate is particularly suitable because such materials are attractive, and the processing can be visually monitored externally for precise processing.

The utensil tool consists of two opposite-facing, disc-shaped presser units:

- 1) a male presser unit 10 that has a protuberant male rotary grating means 12 comprising a plurality of protruding grater elements 14 with a center void 15 forming a grating or grater element row 16 located on the male rotary grating means; and a gripping edge 18;
- 2) a female presser unit 20 that has a sunken female grating means 22 comprising a plurality of protruding grater elements 24 having a center nipple 25 forming a grating or grater element row 26 located on the female rotary grating means; a gripping edge 28, and a circular receptacle 30.

5

The gripping edges 18 and 28 provide a convenient means for the hand gripping of the presser units. The gripping edge should preferably be circular in shape, but other shapes such as square, octagonal etc. would also work as long as the shape fits in human hands comfortably for gripping. The width

or the diameter of the gripping edges should be wider than the external width or diameter of the circular receptacle on the female rotary grating means and be located on the two sides of the circular receptacle (see FIG. 1). The wider gripping edges would thus help provide a better grip when the presser units are being handled by the user. A compression and counter-twisting force can then be applied onto the presser units to process the garlic clove.

The circular receptacle 30 on the female presser unit serves several important functions:

- It retains the raw garlic cloves pending processing;
- It has an internal diameter slightly bigger than that of the diameter of the male rotary grating means so it can serve as a receptacle for the male rotary grating means to be freely inserted to mate with the female grating means for processing the garlic clove;
- It allows the two presser units to be freely rotatable against each other around a common axis to process the garlic clove(s);
- The circular receptacle 30 sets an appropriate depth for the male grating means to be inserted into the female grating means and enable the two rows of protruding grater elements to become *intermingled* (or interlocked) as they merge as shown in FIG. 2.
- It provides for adequate separation between the two gripping edges so the user's fingers on one hand would not interfere with those on the other hand during usage;
- Lastly it provides an enclosure for a short-term storage of processed garlic.

By arranging the protruding grater elements in two separate rows on the respective male and female grating means, they would function as two sets of grating "teeth" that works jointly to accomplish grating of the garlic clove.

FIG. 2 shows a cross sectional view of the garlic tool showing the preferred embodiment of having two rows of protruding grater elements that are *intermingled* (or interlocked) at the maximum insertion of the male grating means when they are rotated into alignment with the two sets of grater elements merging with each other forming one straight row. Thus it can be seen that when the male grating means is fully inserted and the two grating rows are rotated to align with each other, then any material that is caught between the two rows of protruding grater elements will be grated into bits the size of the distance between each adjacent grater elements on the same row. Note the protruding grater elements on the male grating means can reach all the way to the bottom of the protruding grater elements on the female grating means in this *intermingled* (or interlocked) design.

FIG. 3 shows a top schematic cross-sectional view of the relative positioning of the *intermingled* (or interlocked) rows of protruding grater elements at the maximum insertion of the male grating means when they are out of alignment by about 20 degrees as they are being counter-twisted relative to each other. Again, it can be seen here that the garlic clove placed anywhere within the sweeping path or locus 32 of the grater elements would be grated by the two closing rows of protruding grater elements.

The preferred embodiment of a protruding grater element is show in FIG. 1 to have relatively sharp cutting edges on its sides for efficient grating and gentle rounded corners elsewhere to prevent garlic

bits from being caught in crevices so they can be easily gathered and the garlic tool can be easily rinsed clean after use. Some bending or curvature of the element is shown in the figure. Simple geometry dictates that for as long as the elements have a certain width, they should have a certain curvature so the two separate sets of *interlocking* grater elements can rotate against each other without interference. So the curvature would be more pronounced for elements closer to the center. At the very center, one element row would have a center nipple 25, and the other element row would have a matching circular center void 15 as shown.

In the preferred embodiment, the protruding grater element is an integral part of the presser unit and is made of the same material such as polycarbonate or other clear or semi-clear plastic. Thus individual protruding elements should be made sizable for robustness. If the protruding grater elements are made of metal such as stainless steel, then they can be made to be less robust but considerably sharper.

The grater elements on both the male and female grating means in the preferred embodiment are basically similar to each other individually with only slight variations. The grater elements can also be different from each other. Variations in design for the protruding grater elements, or the center nipple and its corresponding void, however, can affect the bit size, grating efficiency, and the ease of cleaning.

When a clove of garlic is put between the male and female presser units, the user can apply a counter-twisting and compression force on the presser units by hand-gripping the two presser units at the gripping edges. The two counter-revolving rows of protruding grater elements on the presser units act as two pairs of rakes rotating in opposite directions swiping the pressed garlic. Slippage of the garlic between the two grating means is prevented. In the preferred embodiment, the pressed garlic is grated as the two *intermingled* rows of protruding grater elements is rotated to close in on each other finally passing through each other thus grating the pressed garlic into fine bits about the size of the width of each protruding grater element.

The pressed garlic can be repeatedly grated by simply rotating the presser units more turns. Since the user can visually monitor the garlic clove through the transparent presser units while it is being processed, the grating of the garlic clove can be precisely controlled for optimum bit size and texture.

After the garlic is properly grated, if the user first align the two rows of protruding grater elements together, and then slightly twist one presser units back-and-forth against the other in a small swing angle on either side of the other row, the garlic bits will become collected neatly in two pie-shaped piles in the space away from the grater element rows. This would enable the garlic bits to be easily scooped out for use and allow the presser units to be easily rinsed clean.

Instead of using the interlocking grater elements rows design, it can be seen that the rotary grating surfaces of the male and female presser units can potentially use certain grating design such as "waffle", diamond pattern, etc. Then the grating of garlic theoretically can be done by vigorously twisting and forcing the two presser units together. However, if pure surface grating patterns are employed as the only means for grating, then this operation is generally unsatisfactory at best. This

is because pressed garlic has a tendency to slip between the two presser units regardless of the surface pattern making proper grating impossible to achieve. This problem is even more pronounced if the garlic cloves are not first pre-peeled.

Note the protruding grater elements rows can be arranged in:

- a long single row on the respective male and female grating means encompassing their respective centers; or looking at it slightly differently, in two short rows 180 degrees apart extending outward from their respective centers. This is the preferred embodiment shown in FIG.1.
- a “Y”-shaped arrangement representing three short rows of grater elements 120 degrees apart, extending outward from the respective centers of the two presser units.

This invention is unique in its being the only garlic tool that has the theoretical minimum possible number of parts – two presser units; and the only garlic preparation gadget that does not force processed garlic through predetermined perforations on a grating or sieve member. This invention is also unique in being the only one that would allow repeated grating in conjunction with continuous visual monitoring enabling precise garlic processing control for optimum bit size and texture.

Reference Numerals in Drawings

10	male presser unit
12	rotary male grating means
14	protruding grater element
15	center void
16	grater element row
18	gripping edge
20	female presser unit
22	rotary female grating means
24	protruding grater element
25	center nipple
26	grater element row
28	gripping edge
30	circular receptacle
32	locus or sweeping path of grater elements

OPERATION AND UTILIZATION

The operation of the garlic tool is simply accomplished by the following steps:

- 1) Pre-press to crush the garlic clove(s) by forcing the set of closed presser units down on an unpeeled garlic clove, or by striking it with the set. The skin of the garlic clove will come loose to be discarded.
- 2) Place the crush-peeled garlic clove(s) between the presser units.
- 3) Close the set together by inserting the male presser unit into the female presser unit.
- 4) Use both hands to counter-twist the two presser units while maintaining a slight compression force. Visually observe the processing to determine whether the garlic cloves are properly grated (external viewing of the entire processing is possible since the garlic tool is made of transparent plastic). Repeat counter-twisting if necessary.
- 5) Before opening the presser units, align the two grater element rows, then counter-twist the two presser units in a slight back-and forth motion against each other in a finite angle (less than 45 degrees on either side of each other). This would force the grated garlic bits to gather in two neat quadrant or pie-shaped piles in the space away from the two grater element rows allowing easy access to the garlic bits for use in cooking.
- 6) Rinse clean the set and leave to dry.

CONCLUSION, RAMIFICATIONS, AND SCOPE OF INVENTION

Thus the reader will see that the garlic tool of the invention provides a simple, inexpensive, easy to operate and clean, compact and elegant device that is vastly superior to the common garlic press of the familiar two handle, perforated sieve design.

While the above description contains many specificities, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of one preferred embodiment thereof. Many other variations are possible. For example, the exterior shape of the presser units including the gripping edges and the exterior of the receptacle can be square, or octagonal; the presser units can be made with non-transparent material such as aluminum (although losing the advantage that the garlic can be viewed as it is being processed); many other forms of the rotary grating means can be possible; and lastly the two presser units can form part of an automatic processing device, etc.

Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended Claims and their legal equivalents.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An apparatus for processing edible substances, the apparatus comprising:

a first processing unit comprising:

a grater having a circular surface; and

a first plurality of spaced-apart grater elements projecting from said circular surface of said grater generally along a plurality of radii of said circular surface of said grater; and

a second processing unit comprising:

a receptacle, operably configured to receive said grater in rotatable engagement therewith, and having a circular inner surface; and

a second plurality of spaced-apart grater elements projecting from said circular inner surface of said receptacle generally along a plurality of radii of said circular inner surface of said receptacle;

wherein said grater and said receptacle are operably configured to define at least two but no more than three generally circular sector regions free of grater elements when said grater is received in said receptacle and when said first and second pluralities of spaced-apart grater elements are aligned.

2. The apparatus of claim 1, wherein said grater comprises a protuberant grater.
3. The apparatus of any one of claims 1 or 2, wherein said receptacle comprises a circular receptacle.
4. The apparatus of any one of claims 1 to 3:

wherein said first plurality of spaced-apart grater elements project from said circular surface of said grater generally along two radii of said circular surface of said grater separated by **180°**;

wherein said second plurality of spaced-apart grater elements project from said circular inner surface of said receptacle generally along two radii of said circular inner surface of said receptacle separated by **180°**; and

wherein said grater and said receptacle are operably configured to define a generally semi-circular region free of grater elements when said grater is received in said receptacle and said first plurality of spaced-apart grater elements and when said second plurality of spaced-apart grater elements are aligned.

5. The apparatus of any one of claims 1 to 3:

wherein said first plurality of spaced-apart grater elements project from said circular surface of said grater generally along three radii of said circular surface of said grater separated by **120°**; and

wherein said second plurality of spaced-apart grater elements project from said circular inner surface of said receptacle generally along three radii of said circular inner surface of said receptacle separated by **120°**.

6. The apparatus of any one of claims **1** to **5**, wherein said first plurality of grater elements and said second plurality of grater elements are operably configured to be intermingled when said grater is received in said receptacle and when said first plurality of grater elements and said second plurality of grater elements are aligned.
7. The apparatus of any one of claims **1** to **6**, wherein said first processing unit and said second processing unit are sized to fit in a human hand.
8. The apparatus of any one of claims **1** to **7**, wherein said first processing unit further comprises a first gripping edge extending wider than an external width of said receptacle, and said second processing unit further comprises a second gripping edge extending wider than said external width of said receptacle.
9. The apparatus of any one of claims **1** to **8**, wherein said first processing unit and said second processing unit are made of transparent plastic.
10. The apparatus of any one of claims **1** to **9**, wherein said first plurality of spaced-apart grater elements define a center void, and wherein said second plurality of spaced-apart grater elements further comprise a center nipple operably configured to be received in said center void.
11. The apparatus of any one of claims **1** to **10**, wherein said grater elements comprise relatively sharp cutting edges.

12. The apparatus of any one of claims 1 to 11, wherein said first plurality of spaced-apart grater elements are an integral part of said first processing unit, and said second plurality of spaced-apart grater elements are an integral part of said second processing unit.
13. The apparatus of any one of claims 1 to 12, wherein said first plurality of spaced-apart grater elements and second plurality of spaced-apart grater elements are made of metal.
14. An apparatus for processing of edible substance, the apparatus comprising:
 - a first mating circular processing unit having a first row of a plurality of spaced apart mincing teeth and a first circular mincing surface, said first row of mincing teeth being disposed substantially along a diameter of said first mincing surface; and
 - a second mating circular processing unit having a second row of a plurality of spaced apart mincing teeth and a second circular mincing surface, said second row of mincing teeth being disposed substantially along a diameter of said second mincing surface;wherein said first and second row of mincing teeth are configured to cross-cut without interference with each other when said first and second mating circular processing units are set to mate and are counter-twisted against each other, and wherein said first and second mating circular processing units are operably configured to define a generally semi-circular region free of grater elements when said first and second mating circular processing units are set to mate and when said first and second row of mincing teeth are aligned.

15. A palm-sized rotary kitchen tool of at least two pieces suitable for processing of garlic, comprising male and female presser units that are configured to be joined in a mating relationship that supports rotary movement of said male presser unit within said female presser unit and defines a cylindrical grating chamber of sufficient volume to retain at least one garlic clove therein when said male presser unit is fully received within said female presser unit, said male and female presser units comprising respective grating teeth that are configured to define a plurality of substantially equivalent volumes being free of grating teeth when said respective grating teeth of said male and female presser units are aligned to each other; wherein said female presser unit comprises a circular receptacle; and wherein a circumference of said grating chamber is equivalent to an inner circumference of said circular receptacle, and wherein said male presser unit further comprises a gripping edge having its width being wider than an outer width of said circular receptacle; and wherein said circular receptacle abuts said gripping edge when said male presser unit is fully received within said female presser unit.
16. A palm-sized rotary kitchen tool of at least two pieces suitable for processing of garlic, comprising male and female presser units that are configured to be joined in a mating relationship that supports rotary movement of said male presser unit within said female presser unit and defines a cylindrical grating chamber of sufficient volume to retain at least one garlic clove therein when said male presser unit is fully received within said female presser unit, said male and female presser units comprising respective grating teeth that are configured to define a plurality of substantially equivalent volumes being free of grating teeth when said respective grating teeth of said male and female presser units are aligned to each other wherein said male presser unit comprises a cylindrically shaped protuberant rotary grating member having a circular face thereon and wherein said grating teeth on said male presser unit are spaced apart in a single row on said circular face and span a diameter of said circular face.

17. The tool of claim 16, wherein said female presser unit comprises a cylindrical shaped sunken receptacle having a circular bottom thereon; and wherein said grating teeth on said female presser unit are spaced apart in a single row on said circular bottom and span a diameter of said circular bottom.
18. The tool of claim 17, wherein the number of grating teeth on said male presser unit differs from the number of grating teeth on said female presser unit by one; said grating teeth further including one central protruding element.

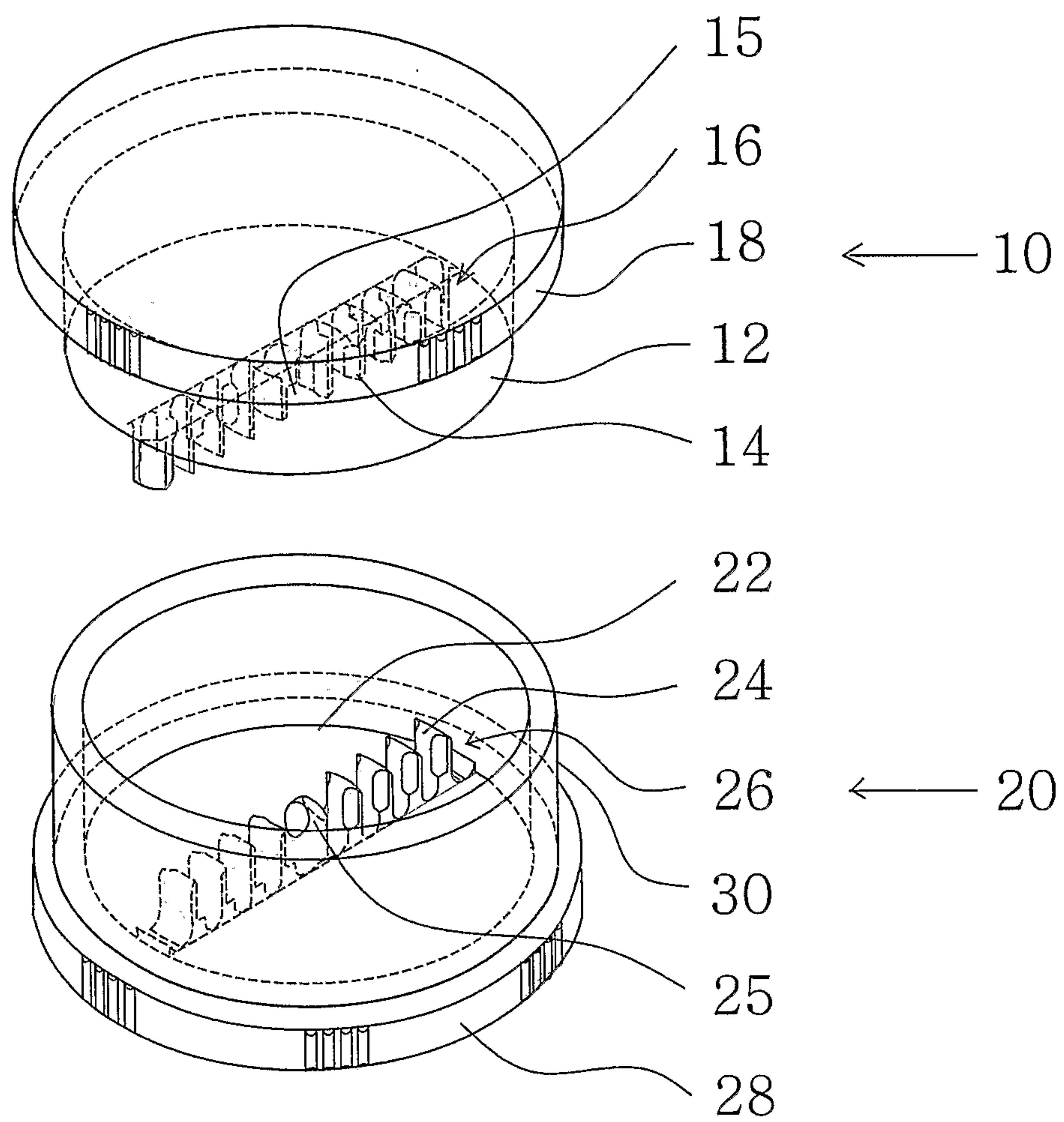


FIG. 1

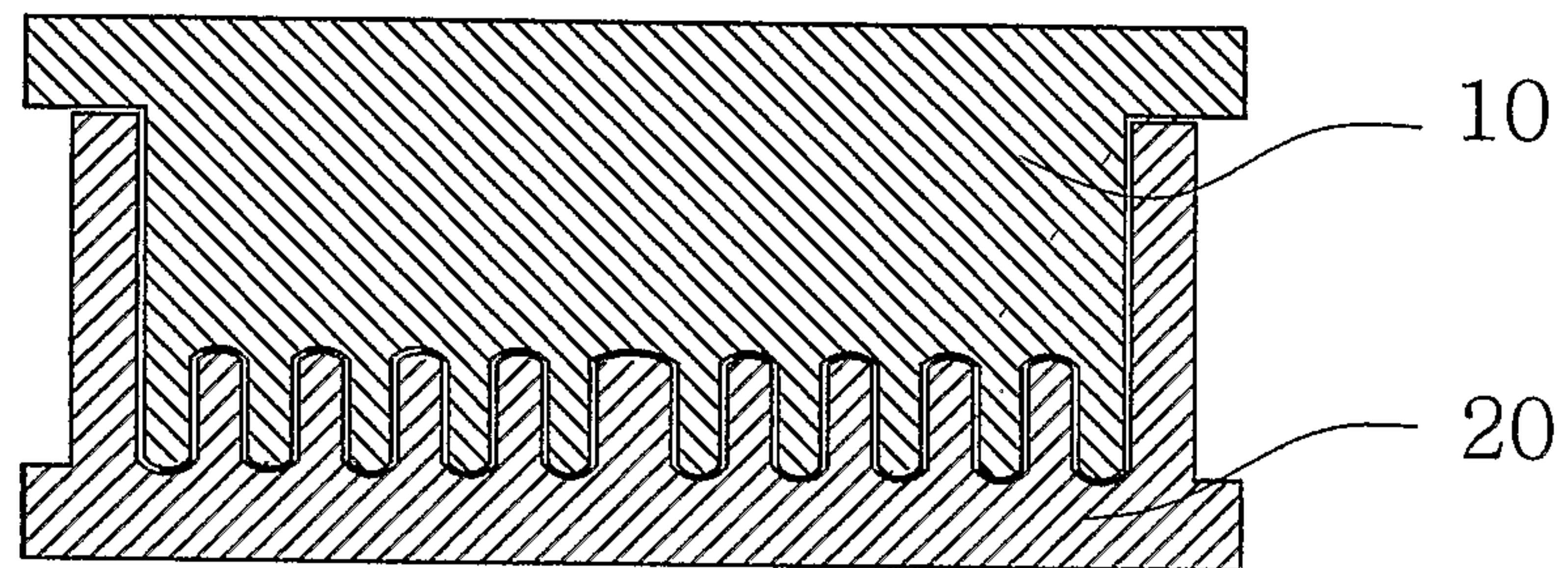


FIG. 2

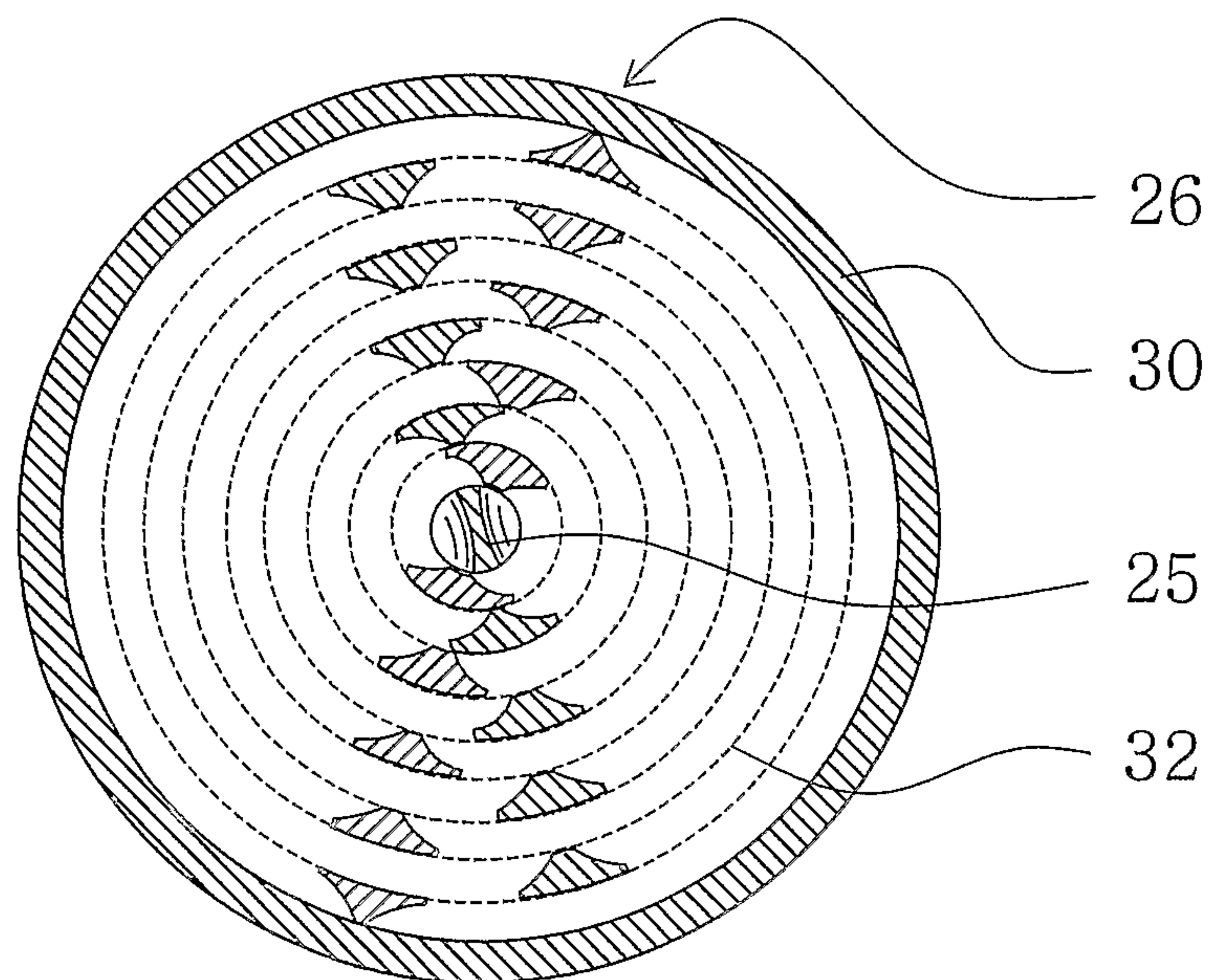


FIG. 3

