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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 January 2009 (15.01.2009)

PCT

(10) International Publication Number
WO 2009/008564 A1

(51) International Patent Classification:
A22C 25/20 (2006.01)

(21) International Application Number:
PCT/KR2007/003383

(22) International Filing Date: 12 July 2007 (12.07.2007)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2007-0068072 6 July 2007 (06.07.2007) KR

(71) Applicant and
(72) Inventor: **LEE, Kwon Seok** [KR/KR]; 418 Byeongsan-dong, Gangneung-si, Gangwon-do 210-290 (KR).

(74) Agent: **OH, Wi-Hwan**; 5th Fl., Eunseong Bldg., 601-18, Yeoksam-Dong, Kangnam-Gu, Seoul 135-080 (KR).

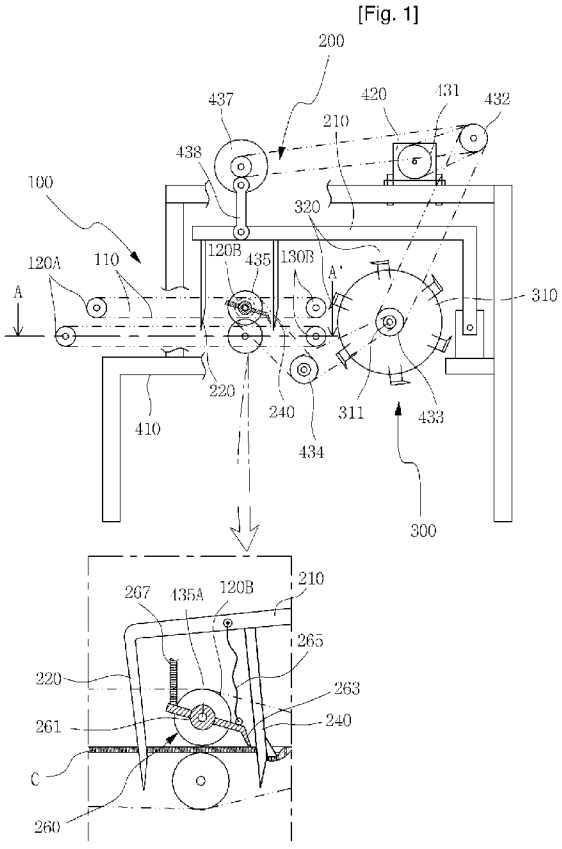
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(54) **Title:** SQUID TEARING MACHINE WITH A PRESSING MEMBER

[Fig. 1]



(57) **Abstract:** A squid tearing machine with a pressing member according to the present invention is capable of effectively preventing generation of inferior products in which tissue of the squid is broken around a thinner or damaged part, by securely fixing the vicinity of a part being torn of a squid. The squid tearing machine comprises a feeding unit for transferring forward a squid supplied; a preliminary tearing unit tearing only lateral sides of the squid except the middle part based on view from the front or the rear, by a preliminary tearing blade thereof; and a main tearing unit finally tearing the middle part remaining after preliminarily tearing the lateral sides, by a main tearing blade thereof, and further comprises the pressing member mounted to the preliminary tearing unit to pressingly support the vicinity of a part being torn of the squid during preliminary tearing by the preliminary tearing blade.

WO 2009/008564 A1

Description

SQUID TEARING MACHINE WITH A PRESSING MEMBER

Technical Field

[1] The present invention relates to a squid tearing machine, and more particularly to a squid tearing machine with a pressing member capable of securely fixing the vicinity of a part being torn of a squid so as to effectively prevent inferior products in which, for example, tissue of the squid is broken around a thinner or damaged part.

Background Art

[2] Generally, a squid tearing machine is used to produce dried fluffy squid strips in bulk by thinly tearing a flat dried squid.

[3] In order to make well-seasoned dried squid strips, the squid should not be merely stripped but roughly torn out along its texture to have rich fluffs thereon. Recently, therefore, a variety of squid tearing machines have been developed to substantially substitute for traditional manual work.

[4] For example, one of conventional squid tearing machines is structured to tear a flat dried squid into thin strips using tearing blades mounted along circumference of a rotary disc while transferring the dried squid by a feeding chain.

[5] The conventional squid tearing machine, however, pokes the middle part of the squid with the tearing blade and tears the squid out at once. This method often generates inferior products of partly broken tissue of the dried squid while the dried squid is being torn along the texture. This happens when the middle part of a just-dried squid is excessively pulled because the middle part is relatively less dried and frailer than the peripheral part.

[6] In order to solve such a problem, another conventional squid tearing machine has been developed which operates stepwise by tearing lateral sides of the dried squid preliminarily and then the middle part next. The stage-type squid tearing machine is capable of reducing the inferiority rate remarkably.

[7] Nevertheless, even in the stage-type squid tearing machine, inferior products are often generated when the dried squid is partly taken off according to the condition of the squid being preliminarily torn.

[8] More particularly, when cutting a tubbish squid into 2~3mm thin slices to make the dried squid strips, frail parts such as partial cuts or relatively thinner parts are generated. During the preliminary tearing, tissue of the dried squid may be broken from such frail parts, thereby generating the inferior products.

Disclosure of Invention

Technical Problem

[9] Therefore, the present invention has been made in view of the above-mentioned problems, and it is an object of the present invention to provide a squid tearing machine with a pressing member capable of securely fixing the vicinity of a part being torn of a squid during preliminary tearing.

Technical Solution

[10] According to an aspect of the present invention, there is provided a squid tearing machine with a pressing member, comprising a feeding unit for transferring a supplied squid forward; a preliminary tearing unit tearing only lateral sides of the squid except the middle part as seen in the anteroposterior view, by a preliminary tearing blade thereof; and a main tearing unit finally tearing the middle part remaining after the lateral sides are torn, by a main tearing blade thereof, the squid tearing machine further comprising the pressing member mounted to the preliminary tearing unit to pressingly support the vicinity of a part being torn of the squid during preliminary tearing by the preliminary tearing blade.

[11] The pressing member is further equipped to the main tearing unit to pressingly support the vicinity of the part being torn of the squid during main tearing by the main tearing blade.

[12] The pressing member is mounted in association with an elevating body that moves the preliminary tearing blade up and down, so as to pressingly support the squid when the preliminary tearing blade is moved down.

[13] The pressing member comprises a main body connected to the elevating body by a distal end thereof through a wire, so that the distal end is moved up and down along with the movement of the elevating body; a pressing piece protruded downward from the distal end of the main body to press down the squid; and a spring mounted to the main body to supply resilience for biasing the distal end of the main body downward.

[14] The preliminary tearing unit and the main tearing unit include a support block, respectively, for supporting a lower surface of the squid at position corresponding to the preliminary tearing blade and the main tearing blade, and the support block includes an interference prevention dent in a "U" or "V" shape to prevent interference with the preliminary tearing blade and the main tearing blade.

[15] Lower ends of the preliminary tearing blade and the main tearing blade are partly inserted in the interference prevention dents when tearing of the squid is performed.

[16] The preliminary tearing blade and the main tearing blade are pointed at their tips and increased in lateral width as going upward so as to poke the squid and then expand the poked part along the texture of squid as moving down, and are bent backward as going downward to prevent contact with the support blocks when moving down.

[17] The tearing blades have a pointed lower end and lateral width increasing as going

upward, so as to poke the squid and then expand the poked part as moving down along the texture of squid.

[18] The preliminary tearing blade is increased in both anteroposteior width and lateral width as going upward in a manner that the lateral width is greater than the antero-posterior width, thereby having an inverse quadrangular pyramid shape.

[19] The preliminary tearing blade is constituted by a first preliminary tearing blade for performing first preliminary tearing of the squid being transferred, and a second tearing blade for performing second preliminary tearing the squid, and the pressing member pressingly supports the vicinity of a part undergoing the second preliminary tearing.

[20] The squid tearing machine further comprises a pressing projection protruded forward from an upper part of the second preliminary tearing blade to press down a front side of the part poked by the blade parts.

[21] The preliminary tearing blade consists of two blade parts laterally arranged in a "W" shape.

[22] The respective second preliminary tearing blades consist of the two blade parts, and the two blade parts are bent by different angles from each other backward so that the part being torn of the squid is temporarily caught between the two blade parts during the tearing.

[23] The anteroposterior interval between ends of the blade parts of the second preliminary tearing blade is about 0.5~1.0mm.

Advantageous Effects

[24] As described above, a squid tearing machine with a pressing member according to the present invention is capable of remarkably reducing rate of inferiority caused by broken tissues, by securely fixing the squid by the pressing member during preliminary tearing.

[25] The squid tearing machine according to the present invention is capable of further r educing the inferiority rate by tearing the squid stepwise rather than at once, that is, by preliminarily tearing lateral sides which are relatively well dried, and then the middle part which is relatively less dried.

[26] The squid tearing machine according to the present invention is equipped with an interference prevention dent formed on a support block to prevent interference among the support block and tearing blades. Therefore, mechanical damage by friction among the tearing blades and the support block can be reduced.

[27] By having a preliminary tearing blade consisting of two blade parts arranged in a "W" shape, the squid tearing machine is capable of performing more accurate preliminary tearing.

[28] Furthermore, since the two blade parts of a final preliminary tearing blade are bent keeping an interval therebetween in a forward and backward direction, breakage of the tissue of the squid undergoing the final preliminary tearing can be prevented. Thus, inferiority rate can be reduced.

Brief Description of the Drawings

[29] The foregoing and other objects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

[30] FIG. 1 is a side view schematically showing the whole structure of a squid tearing machine according to an embodiment of the present invention;

[31] FIG. 2 is a perspective view showing the structure of a pressing member of the squid tearing machine;

[32] FIG. 3 is a side view for explaining the operation of the squid tearing machine of FIG. 1;

[33] FIG. 4 is a partially enlarged view of the squid tearing machine, for explaining a second preliminary tearing operation according to the embodiment of the present invention;

[34] FIG. 5 is a sectional view of FIG. 1 cut along a line A-A';

[35] FIG. 6 is a front view and a side view for explaining the structure of a first preliminary tearing blade according to the embodiment of the present invention;

[36] FIG. 7 is a front view and a side view for explaining the structure of a second preliminary tearing blade according to the embodiment of the present invention;

[37] FIG. 8 is a front view and a side view for explaining the structure of a main preliminary tearing blade according to the embodiment of the present invention;

[38] FIG. 9 is a perspective view of a support block according to the embodiment of the present invention;

[39] FIG. 10 is a reference view for explaining the operation of the support block of the embodiment of the present invention;

[40] FIG. 11 is a reference view showing a squid being torn by the squid tearing machine according to the embodiment of the present invention; and

[41] FIGS. 12 and 13 are reference views for explaining the structure of preliminary tearing blades according to another embodiment of the present invention.

Best Mode for Carrying Out the Invention

[42] Hereinafter, an exemplary embodiment of the present invention will be described in detail with reference to FIG. 1 through FIG. 5. FIG. 1 is a side view schematically showing the whole structure of a squid tearing machine according to an embodiment of the present invention. FIG. 2 is a perspective view of a pressing member for explaining

the structure of the pressing member. FIG. 3 is a side view for explaining the operation of the squid tearing machine of FIG. 1. FIG. 4 is a partially enlarged view of the squid tearing machine, for illustrating a second preliminary tearing operation according to the embodiment of the present invention. FIG. 5 is a schematic sectional view of FIG. 1 cut along a line A-A'.

[43] As shown in the drawings, a squid tearing machine according to the embodiment of the present invention comprises a feeding unit 100 for transferring a squid, a preliminary tearing unit 200 for preliminarily tearing the transferred squid, and a main tearing unit 300 for making dried squid strips by finally tearing the preliminarily-torn squid. As can be appreciated from the above structure, the squid tearing machine according to the embodiment of the present invention performs tearing of the squid stepwise rather than at once, considering that dried degree of a just-dried squid differs according to the part. Consequently, inferiority rate can be reduced while producing high-quality dried squid strips having rich fluffs.

[44] Furthermore, the squid tearing machine additionally has a pressing member 260 for securely holding the squid during preliminary tearing, so that inferior products are not generated even during the preliminary tearing. The pressing member 260 helps maximize the effect of the stepwise tearing.

[45] Hereinafter, the structure of the squid tearing machine will be described in detail.

[46] First, the pressing member 260 pressingly fixes the squid undergoing final preliminary tearing. For this purpose, the pressing member 260 includes a bearing insertion hole 261D in the middle part 261A of a main body 261 thereof to insert a bearing therein so that a distal end 261B and a proximal end 261C of the pressing member 260 move up and down through seesaw motion. As the bearing is inserted in the bearing insertion hole 261D, the pressing member 260 is supported to idly rotate on a rotational shaft 435A disposed nearby. The distal end 261B of the main body 261 of the pressing member 260 is connected to an elevating body 210 by a wire 265 so as to be moved up and down along with the elevating body 210. Here, various materials including steel, as long as being endurable against applied tension load, can be used for the wire 265.

[47] The pressing member 260 further includes a pair of pressing pieces 263 and a spring 267. The pressing pieces 263 are protruded downward from both sides of the distal end 261B of the main body 261. The pressing pieces 263 have pointed lower ends for poking down the squid as the distal end 261B of the main body 261 moves down. Accordingly, while a second preliminary tearing blade 240 pokes the squid, the pressing pieces 263 of the pressing member 260 presses down the very rear part of the part being torn so that the squid is not moved. The spring 267 is disposed at the proximal end 261C of the main body 261 to supply resilience for biasing the distal end

261B of the main body 261 downward.

[48] According to the above-described structure having the pressing member 260, the inferiority rate can be minimized during the final preliminary tearing. In the step of final preliminary tearing, since the squid has been torn in many parts, the structure of squid is weakened. Therefore, even a little movement of the squid during tearing causes cracks from the frail parts such as minor cuts, damaged parts, or the relatively thinner parts, finally breaking the tissues of squid. However, when the pressing member 260 securely fixes the squid in the final preliminary tearing step, such inferiority can be prevented. Experimentally, the inferiority rate decreased by more than 70% in the squid tearing machine equipped with the pressing member 260.

[49] Thus, the squid tearing machine having the pressing member 260 is capable of minimizing the inferiority rate during the preliminary tearing, with the simple structure. Moreover, the present invention is capable of expanding a tearing area so that the preliminary tearing can be performed up to about 3~4mm to the edge of the squid. Although not shown, the pressing member 260 is mounted to the main tearing unit 300 as well, so as to securely fix the vicinity of a part being torn by the main tearing blade 320. The structure and effects of this case will not be described in detail since being almost the same as in the previous case where the pressing member 260 is mounted to the preliminary tearing unit 200.

[50] The feeding unit 100 is supplied with a flat dried squid and transfers the squid to the main tearing unit 300 through the preliminary tearing unit 200. The feeding unit 100 includes a plurality of sprockets 120A, 120B, 130A and 130B and feeding chains 110 and 140, as shown in FIG. 5. More specifically, the sprockets and the feeding chains comprise side combinations disposed on lateral sides to transfer the squid to the preliminary tearing unit 200, and a middle combination disposed in the middle to transfer the squid from the preliminary tearing unit 200 to the main tearing unit 300. The side combinations comprise the sprockets 120A and 120B and the feeding chain 110, and the middle combination comprise the sprockets 130A and 130B and the feeding chain 140. Such a configuration prevents interference of the feeding chain 110 with support blocks 230, 250 and 330 disposed corresponding to the tearing blades 220, 240 and 320 to support a lower surface of the squid. The sprockets 120A, 120B, 130A and 130B and the feeding chains 110 and 140 of the feeding unit 100 are supported by a supporting frame 410 and supplied with driving force from a driving motor 420 through a plurality of power transmission sprockets 431, 432, 433, 434 and 435 and a power transmission chain.

[51] The preliminary tearing unit 200 is structured to tear lateral sides stepwise except the middle part, as seen from the rear side. For this, the preliminary tearing unit 200 comprises pluralities of first preliminary tearing blades 220 and second preliminary

tearing blades 240 mounted respectively in first and second tearing areas. In addition, the support blocks 230 and 250 for supporting the lower surface of the squid are provided to correspond to the respective preliminary tearing blades 220 and 240.

[52] The first and the second preliminary tearing blades 220 and 240 are mounted to one end of the elevating unit 210. The other end of the elevating unit 210 is hinged on the supporting frame 410 whereas the one end of the elevating unit 210 is connected to a crank 437 through a connecting rod 438, the crank 437 receiving the driving force from the driving motor 420 and converting rotational motion to vertical linear motion, so that the one end where the preliminary tearing blades 220 and 240 are mounted can be moved up and down. Here, other various means such as a cylinder can sure replace the elevating unit 210 in order to move up and down the first and the second preliminary tearing blades 220 and 240.

[53] A plurality of the first preliminary tearing blades 220 are arranged at intervals linearly and transversely, that is, along the texture of the squid. A plurality of the second preliminary tearing blades 240 are also arranged at intervals linearly and transversely, in addition, at a more front side than the first preliminary tearing blades 220 so as to tear the lateral sides of the squid remaining after the operation of the first preliminary tearing blade 220. According to this structure, the lateral sides of the squid being transferred forward can be closely torn along the squid texture by the first and the second preliminary tearing blades 220 and 240. Although the preliminary tearing blades 220 and 240 may be linearly arranged without discrimination at close intervals, it is preferred that the first preliminary tearing blades 220 and the second preliminary tearing blades 240 are discriminatingly arranged to prevent interference with the feeding chains 110 and 140 and improve the efficiency of the preliminary tearing.

[54] The main tearing unit 300 finally tears the rest middle part of about 10~20mm, which is excluded in the preliminary tearing step. For this, the main tearing unit 300 comprises a rotary disc 310 and a main tearing blade 320.

[55] The rotary disc 310 is mounted to a distal end of the supporting frame 410 to rotate around a shaft 311. The rotary disc 310 is rotated by the driving force supplied from the driving motor 420 through the power transmission sprockets 431, 432 and 433 and the power transmission chain. The main tearing blade 320 is arranged tangentially to the rotary disc 310 to vertically poke and pull the squid. Also, in the same manner as the preliminary tearing unit 200, the main tearing unit 300 includes a support block 330 for supporting the lower surface of the squid, disposed corresponding to the main tearing blade 320.

[56] In the above-structured main tearing unit 300, the main tearing blade 320 tears the squid being transferred by poking the middle part and pulling the squid down. Here, the middle part is soft since being not completely dried. However, because the lateral

sides of the squid are already torn by the preliminary tearing unit 200, the squid can be smoothly torn without being broken midway. If the squid is torn suddenly from the middle part without preliminary tearing the lateral sides, the relatively softer middle part would be often broken due to load generated at the relatively tough lateral sides, accordingly increasing the inferiority rate.

[57] Hereinafter, the main tearing blade 320 as well as the preliminary tearing blades 220 and 240 will be described in greater detail.

[58] FIG. 6 is a front view and a side view for explaining the structure of the first preliminary tearing blade according to the embodiment of the present invention, FIG. 7 the second preliminary tearing blade, and FIG. 8 the main tearing blade.

[59] As shown in the drawings, in the same manner as the main tearing blade 320, the preliminary tearing blades 220 and 240 have blade parts 221 and 241 which are pointed at their tips and increased in lateral width and anteroposterior width as going upward, more specifically, in a manner that the lateral width is greater than the antero-posterior width. Thus, the main and preliminary tearing blades 320, 220 and 240 have an inverse quadrangular pyramid shape. As the preliminary tearing blades 220 and 240 poke the squid and move down further, the poked part is expanded due to the increasing lateral width of the tearing blades. Here, the poked part is expanded naturally along the texture of squid. As long as the squid is well secured not to move, inferior products by broken tissues of the squid would be hardly generated. Moreover, the preliminary tearing blades 220 and 240 naturally expand the poked part of the squid along the squid texture, using the increasing anteroposterior width thereof. If the squid is simply cut transversely, most of the squid texture which is actually crooked should be cut out, thereby highly increasing the inferiority rate.

[60] In addition, lower ends of the preliminary tearing blades 220 and 240 and the main tearing blade 320 are bent backward by about 10° to avoid interference with the support blocks 230, 250 and 330. The structure of the support blocks 230, 250 and 330 will be described more particularly later.

[61] Especially, the second preliminary tearing blade 240 further comprises a pressing projection 242 protruded forward from the upper part to press down a front side of the part poked by the blade part 241 formed at the lower part. The part poked and torn by the second preliminary blade 240 can be expanded by the pressing projection 242.

[62] FIG. 9 is a perspective view of the support block 230 according to the embodiment of the present invention, and FIG. 10 is a reference view for explaining the operation of the support block 230.

[63] Referring to the drawings, the support blocks 230, 250 and 330 for supporting the lower surface of the squid being torn by the preliminary tearing blades 220 and 240 and the main tearing blade 320, respectively include interference prevention dents

230A, 250A and 330A formed at distal ends thereof in a "U" or "V" shape. The interference prevention dents 230A, 250A and 330A prevent contact of the tearing blades 220, 240 and 320 with the support blocks 230, 250 and 330 during the operation of the tearing blades 220, 240 and 320 as moved down, thereby preventing the tearing blades 220, 240 and 320 and the support blocks 230, 250 and 330 from being abraded or broken. As a result, replacement period of the tearing blades and the support blocks are extended, thereby enabling semi-permanent use of the above parts. In case that the support blocks 230, 250 and 330 are not provided with the interference prevention dents 230A, 250A and 330A, the tearing blades 220, 240 and 320 need to be distanced from the support blocks 230, 250 and 330, respectively. However, this structure just deteriorates the supporting efficiency of the support blocks 230, 250 and 330 even without helping prevent frictional contact between the tearing blades 220, 240 and 320 and the support blocks 230, 250 and 330. Therefore, the above parts still require often replacement.

[64] Lower ends of the tearing blades 220, 240 and 320 are inserted in the interference prevention dents 230A, 250A and 330A, respectively, by about 1~2mm. Therefore, the support blocks 230, 250 and 330 are able to stably support the left and the right sides while the ends of the tearing blades 220, 240 and 320 are poking the squid, so that the squid can be smoothly poked. In this structure, the ends of the tearing blades 220, 240 and 320 are preferably bent backward by about 10° in order to prevent upper parts of the tearing blades 220, 240 and 320 from contacting the support blocks 230, 250 and 330 due to the increasing lateral width of the tearing blades 220, 240 and 430 when the tearing blades 220, 240 and 320 are moved deep down.

[65] Instead of providing the interference prevention dents 230A, 250A and 330A, the support blocks 230, 250 and 330 may be separately formed on the left and the right. Accordingly, interference between the support blocks 230, 250 and 330 and the tearing blades 220, 240 and 320 can be prevented. Also, flexibility of arrangement can be improved, for example, by arranging the feeding chains 110 and 140 between the interference prevention dents 230A, 250A and 330A.

[66] The operation of the squid tearing machine with a pressing member according to the present invention will be described in greater detail.

[67] First, the driving motor 420 is operated upon application of power. According to this, the sprockets 120A, 120B, 130A and 130B and the feeding chains 110 and 140 of the feeding unit 100, the elevating body 210 of the preliminary tearing unit 200, and the rotary disc 310 of the main tearing unit 300 are operated through the power transmission sprockets 431, 432, 433, 434 and 435 and the power transmission chain. As the elevating body 210 is supplied with the driving force of the driving motor 420, the crank 437 and the connecting rod 438 are operated, thereby periodically moving up

and down one end of the elevating body 210.

[68] Simultaneously, the squid C is continuously supplied to between the feeding chains 110 and advanced forward. The plurality of first preliminary tearing blades 220 arranged along the left and the right of the elevating body 210 are moved down, poking the both lateral sides of the squid C being transferred. As further moving down, the first preliminary tearing blades 220 expand the poked part along the squid texture C1. Here, the preliminary support blocks 230 corresponding to the first preliminary tearing blades 220 assist the tearing work by supporting the lower surface of the squid C, being prevented from contacting with the first preliminary tearing blades 220 by the interference prevention dents 230A. Thus, as shown in the first drawing of FIG. 11, first preliminary tearing of the squid C is completed, thereby forming first preliminary torn parts C2 along the squid texture C1.

[69] After the first preliminary tearing is completed, the elevating body 210 is moved up and then down again. Therefore, as the squid C is further transferred forward, the second preliminary tearing blades 240 moved down together with the elevating body 210 poke and tear the rest part of the lateral sides of the squid C, where has not been torn yet by the first preliminary tearing blades 220. Here, the part poked by the second preliminary tearing blades 240 is formed collinearly with the lateral sides poked by the first preliminary tearing blades 220. In the same manner as the first preliminary tearing blades 220, additionally, the second preliminary tearing blades 240 having the inverse quadrangular pyramid shape poke the squid C and expand the poked part along the squid texture C1 as going down further. While the preliminary support blocks 250 mounted corresponding to the second preliminary tearing blades 240 assist the tearing work by supporting the lower surface of the squid C, the preliminary support blocks 250 can be prevented from contacting with the first preliminary tearing blades 220 by the interference prevention dents 250A.

[70] Meanwhile, as the one end of the elevating body 210 moves down, the distal end 261B of the pressing member 260 connected to the elevating body 210 through the wire 265 is moved down and therefore stably presses down the squid C by the pressing piece 263. Since the squid C is thus securely fixed, the inferior products in which the squid texture C1 broken by the second preliminary tearing blades 240 are not generated during second preliminary tearing. By completing the second preliminary tearing of the squid C, second preliminary torn parts C3 are formed as shown in the middle drawing of FIG. 11. Thus, the preliminary tearing on the lateral sides of the squid C is finished.

[71] Next, the squid C completed with the first and second preliminary tearing is transferred to the main tearing unit 300. The main tearing blade 320 mounted along the circumference of the rotary disc 310 is moved down, thereby poking and pulling down

a remaining middle part C4 of the squid C. Accordingly, the squid C drops in the form of squid strips because the lateral sides of the squid C are already torn. Although the middle part C4 remains soft as imperfectly dried, the lateral sides are not applied with excessive load. As a result, the squid C can be finally torn without having the texture C broken.

[72] Consequently, high-quality squid strips having lots of fluffs on the torn edges are obtained as shown in the last drawing of FIG. 11.

Mode for the Invention

[73] FIGS. 12 and 13 are reference views for explaining the structure of preliminary tearing blades according to a modified embodiment of the present invention.

[74] Referring to the drawings, preliminary tearing blades 220' and 240' of the modified embodiment consist of pairs of blade parts 221' and 241 formed in a "W" shape, respectively. When the preliminary tearing blades 220' and 240' have the pairs of "W"-shaped blade parts 221' and 241' the same effect as using a lot of blades closely arranged in a transverse direction can be obtained, thereby improving the tearing efficiency. Each of the blade parts 221' and 241' of the preliminary tearing blades 220' and 240' are shaped as an inverse quadrangular pyramid and bent backward by about 10° to avoid interference with the support blocks 230, 250 and 330, the same as in the previous embodiment.

[75] Especially, the second preliminary tearing blade 240' among the preliminary tearing blades 220' and 240' has two blade parts 241' bent by different angles from each other backward, so that the part being torn of the squid is supported between the two blade parts 241' during the tearing. Here, it is proper that the anteroposterior interval between ends of the blade parts 241A and 241B of the second preliminary tearing blade 240' is about 0.5~1.0mm. According to the above structure, when the second preliminary tearing blade 240' is moved down, a more backward blade part 241A of the blade parts 241' pokes the part being torn of the squid and simultaneously the squid is pressed down as caught between the more backward tip 241A and a less backward blade part 241B. Next, when the second preliminary tearing blade 240' is moved up, the torn part of the squid caught between the two blade parts 241' are separated naturally.

[76] As described above, by bending the two blade parts 241A and 241B of the second preliminary tearing blade 240' to have a predetermined interval forward and backward, the part being torn of the squid can be securely supported during the second preliminary tearing, accordingly reducing the inferiority rate.

[77] While the invention has been shown and described with reference to certain embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of

the invention as defined by the appended claims.

Claims

[1] A squid tearing machine with a pressing member, comprising:
a feeding unit for transferring a supplied squid forward;
a preliminary tearing unit tearing only lateral sides of the squid except the middle part as seen in the anteroposterior view, by a preliminary tearing blade thereof; and
a main tearing unit finally tearing the middle part remaining after the lateral sides are torn, by a main tearing blade thereof,
the squid tearing machine further comprising the pressing member mounted to the preliminary tearing unit to pressingly support the vicinity of a part being torn of the squid during preliminary tearing by the preliminary tearing blade.

[2] The squid tearing machine of claim 1, wherein the pressing member is further equipped to the main tearing unit to pressingly support the vicinity of the part being torn of the squid during main tearing by the main tearing blade.

[3] The squid tearing machine of claim 1, wherein the pressing member is mounted in association with an elevating body that moves the preliminary tearing blade up and down, so as to pressingly support the squid when the preliminary tearing blade is moved down.

[4] The squid tearing machine of claim 3, wherein the pressing member comprises:
a main body connected to the elevating body by a distal end thereof through a wire, so that the distal end is moved up and down along with the movement of the elevating body;
a pressing piece protruded downward from the distal end of the main body to press down the squid; and
a spring mounted to the main body to supply resilience for biasing the distal end of the main body downward.

[5] The squid tearing machine of claim 4, wherein the main body of the pressing member includes a bearing insertion hole in the center thereof so as to perform seesaw motion in support by a bearing, and a pair of pressing pieces formed at the distal end and pointed at a lower end to poke down the squid.

[6] The squid tearing machine of claim 6, wherein the preliminary tearing unit and the main tearing unit include a support block, respectively, for supporting a lower surface of the squid at position corresponding to the preliminary tearing blade and the main tearing blade, and the support block includes an interference prevention dent in a "U" or "V" shape to prevent interference with the preliminary tearing blade and the main tearing blade.

[7] The squid tearing machine of claim 6, wherein lower ends of the preliminary

tearing blade and the main tearing blade are partly inserted in the interference prevention dents when tearing of the squid is performed.

[8] The squid tearing machine of claim 7, wherein the preliminary tearing blade and the main tearing blade are pointed at their tips and increased in lateral width as going upward so as to poke the squid and then expand the poked part along the texture of squid as moving down, and are bent backward as going downward to prevent contact with the support blocks when moving down.

[9] The squid tearing machine of claim 8, wherein the preliminary tearing blade consists of two blade parts laterally arranged in a "W" shape.

[10] The squid tearing machine of claim 1, wherein the tearing blades have a pointed lower end and lateral width increasing as going upward, so as to poke the squid and then expand the poked part as moving down along the texture of squid.

[11] The squid tearing machine of claim 10, wherein the preliminary tearing blade is increased in both anteroposteior width and lateral width as going upward in a manner that the lateral width is greater than the anteroposterior width, thereby having an inverse quadrangular pyramid shape.

[12] The squid tearing machine of claim 10, wherein the preliminary tearing blade is constituted by a first preliminary tearing blade for performing first preliminary tearing of the squid being transferred, and a second tearing blade for performing second preliminary tearing the squid, and the pressing member pressingly supports the vicinity of a part undergoing the second preliminary tearing.

[13] The squid tearing machine of claim 12, further comprising a pressing projection protruded forward from an upper part of the second preliminary tearing blade to press down a front side of the part poked by the blade parts.

[14] The squid tearing machine of claim 10, wherein the preliminary tearing blade consists of two blade parts laterally arranged in a "W" shape.

[15] The squid tearing machine of claim 12, wherein the respective second preliminary tearing blades consist of the two blade parts, and the two blade parts are bent by different angles from each other backward so that the part being torn of the squid is temporarily caught between the two blade parts during the tearing.

[16] The squid tearing machine of claim 15, wherein the anteroposterior interval between ends of the blade parts of the second preliminary tearing blade is about 0.5~1.0mm.

[17] A squid tearing machine with a pressing member, for tearing a flat dried squid while transferring the squid, comprising:

a feeding unit for transferring forward a squid supplied;

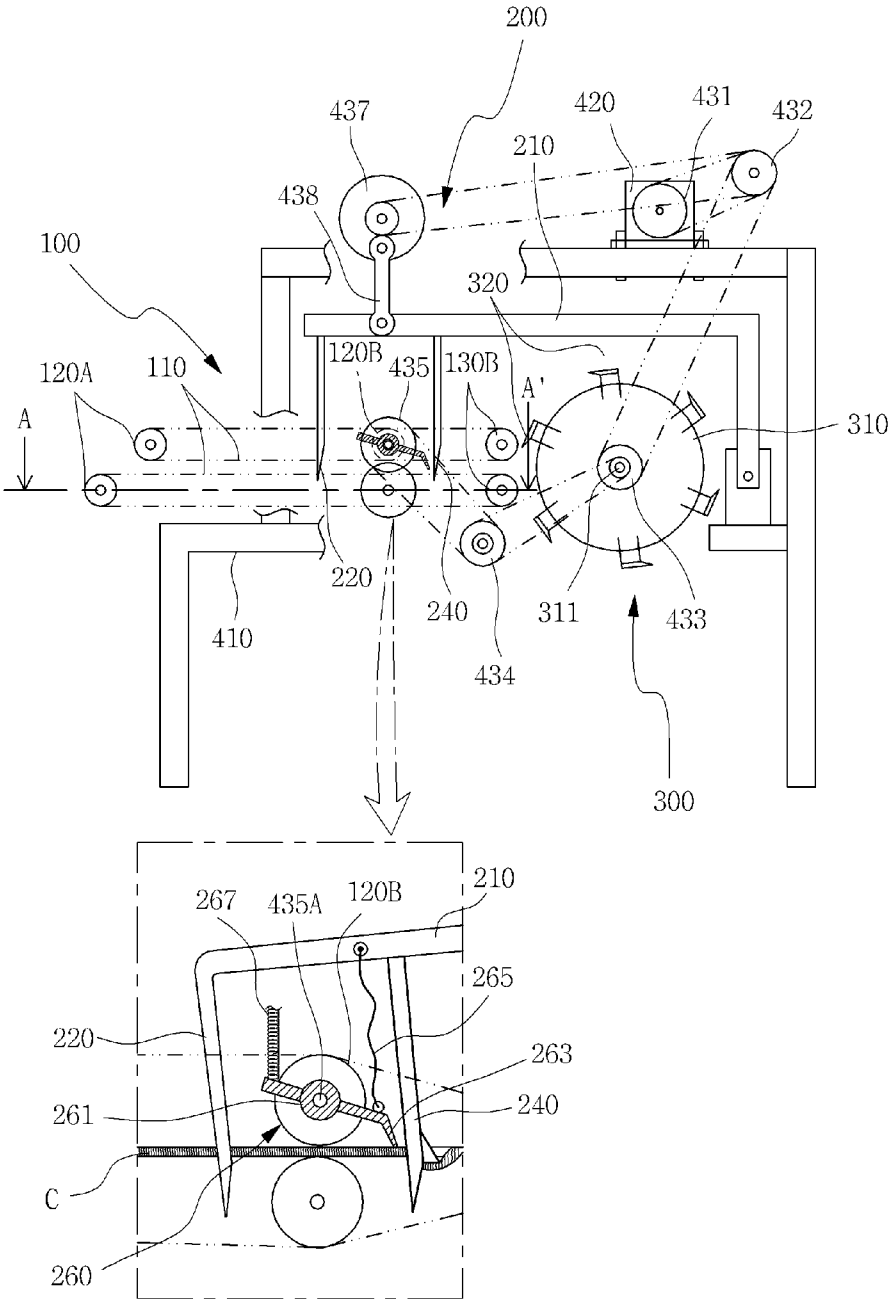
a preliminary tearing unit tearing only lateral sides of the squid except the middle part based on view from the front or the rear, by a preliminary tearing blade

thereof; and

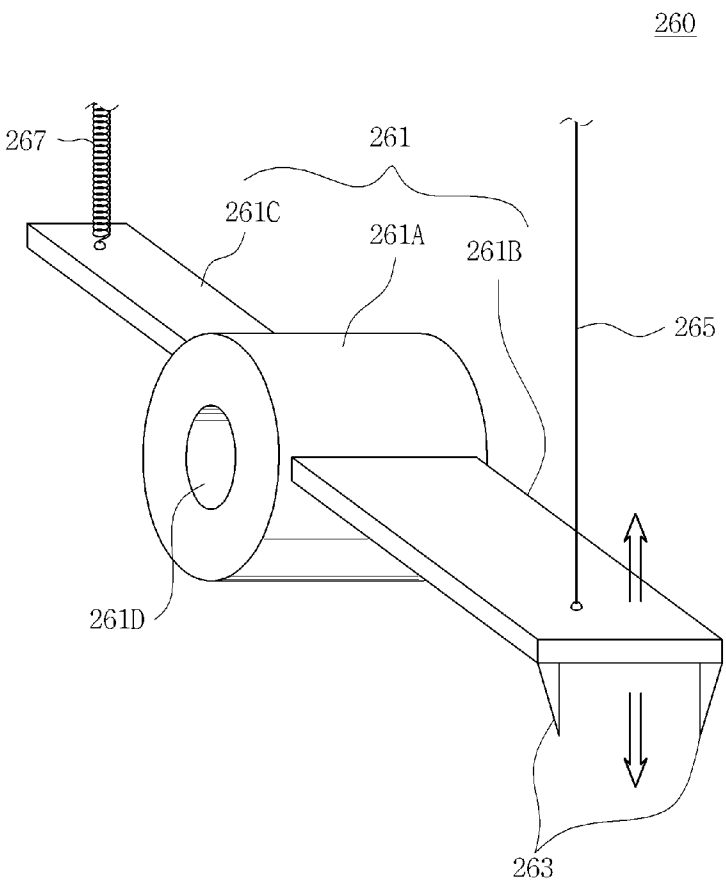
a main tearing unit finally tearing the middle part remaining after preliminarily tearing the lateral sides, by a main tearing blade thereof,

the squid tearing machine further comprising the pressing member mounted to at least one of the preliminary tearing unit and the main tearing unit to pressingly support the vicinity of a part being torn of the squid during tearing by the tearing blades.

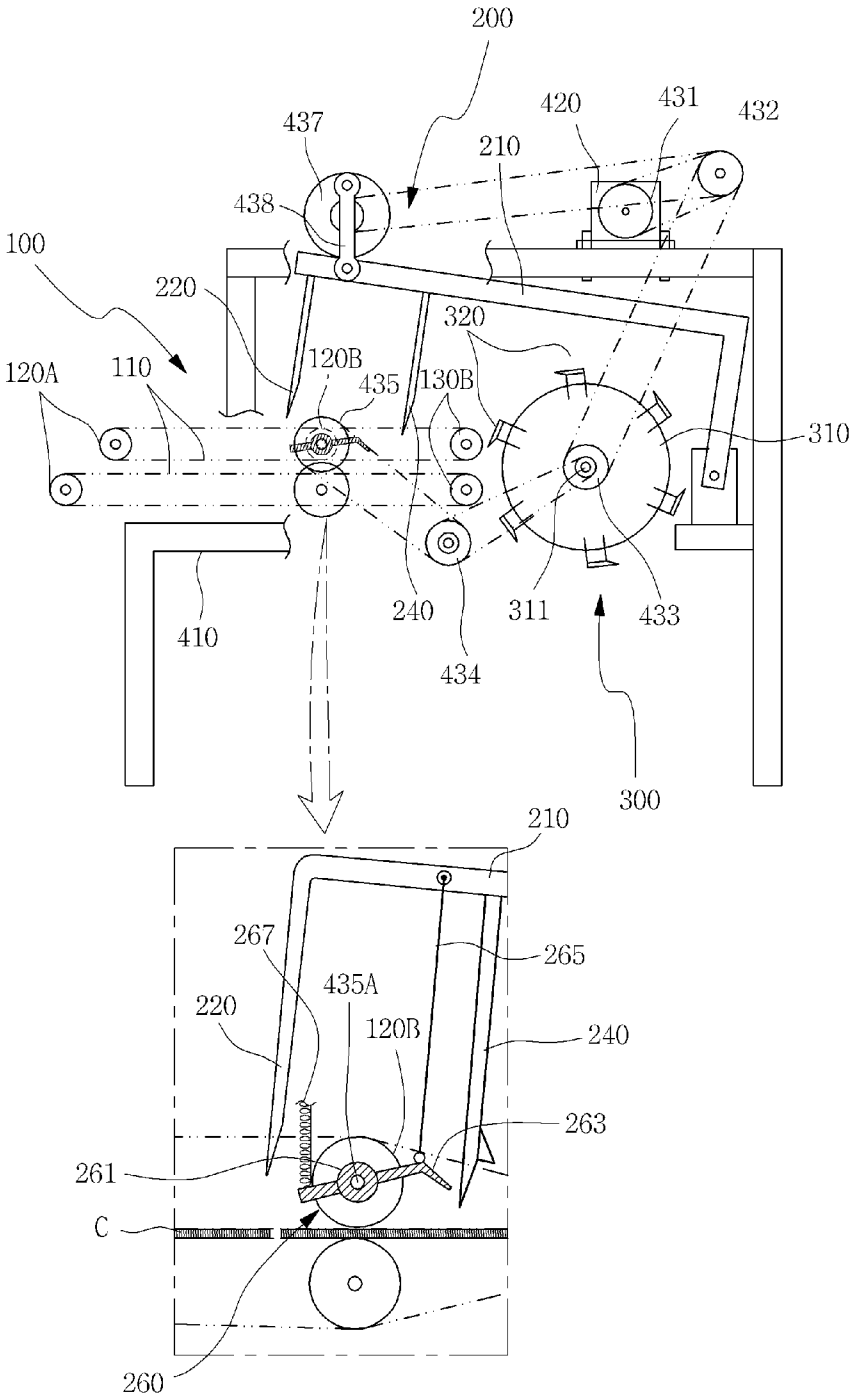
[Fig. 1]


200
437
420
431
432
210
438
100
320
120A
110
120B
435
130B
A'
310
A
220
240
311
433
410
434
300
267
435A
120B
210
265
220
263
261
240
C
260

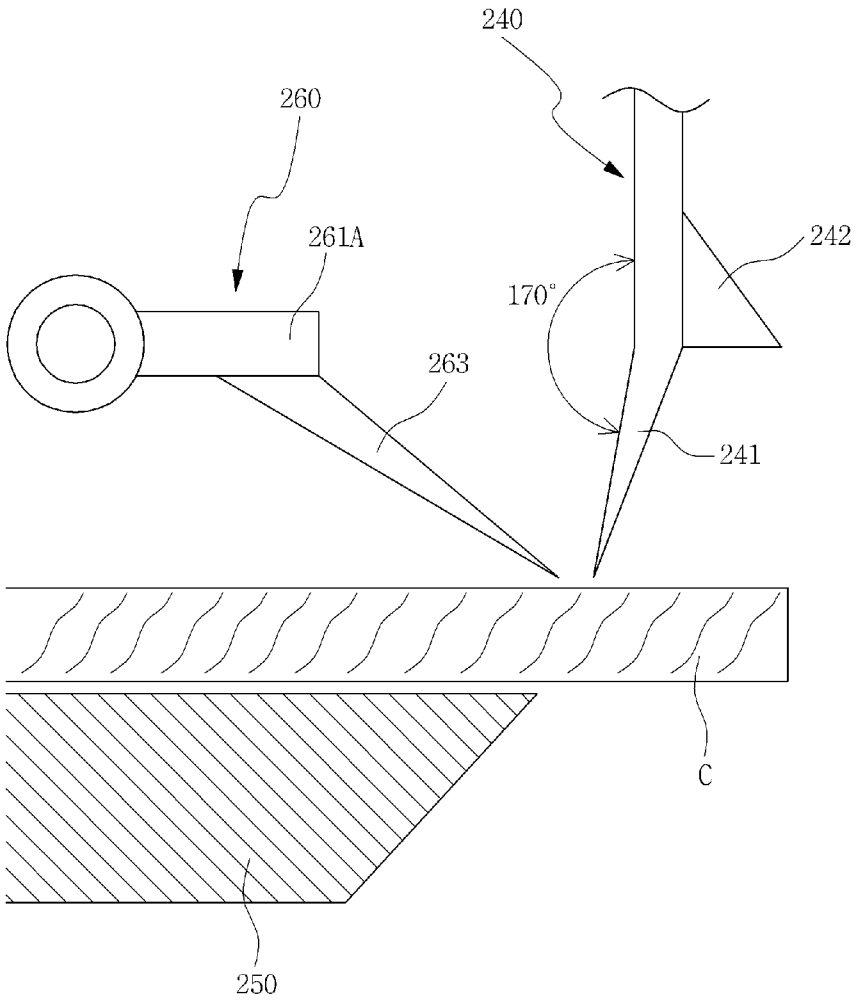
[Fig. 2]



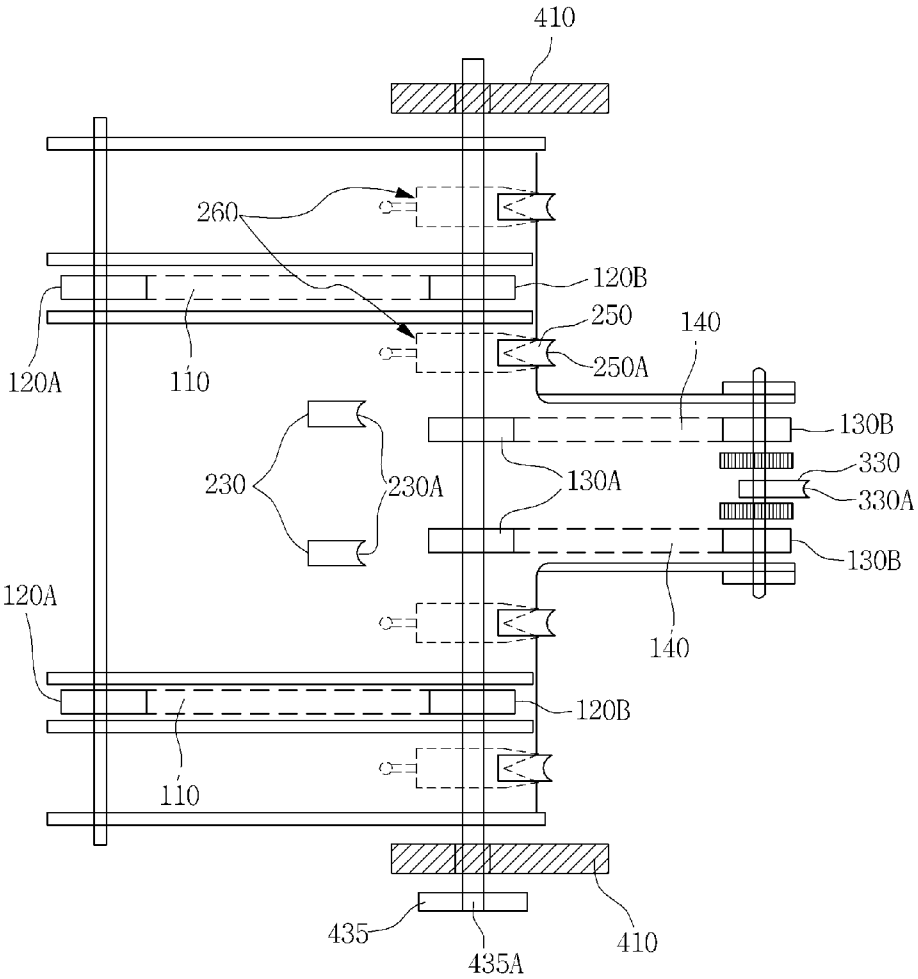
[Fig. 3]


200
437
420
431
432
210
438
100
220
320
120A
110
120B
435
130B
310
410
240
311
433
434
300
210
267
265
435A
220
120B
240
263
261
C
260

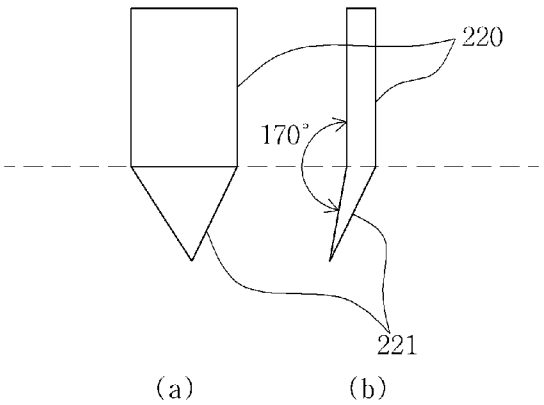
[Fig. 4]



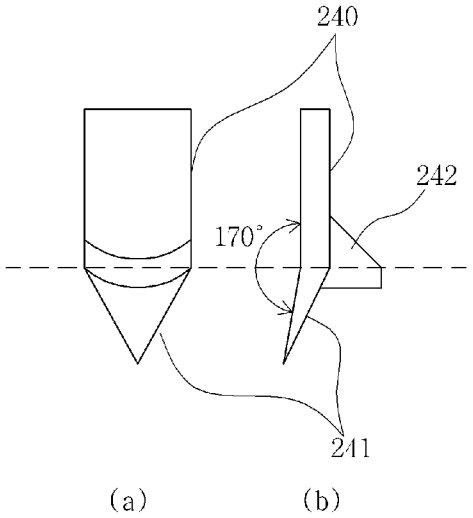
[Fig. 5]


410
260
120B
250
140
120A
110
250A
130B
330
230
230A
130A
330A
130B
120A
140
120B
110
435
435A
410

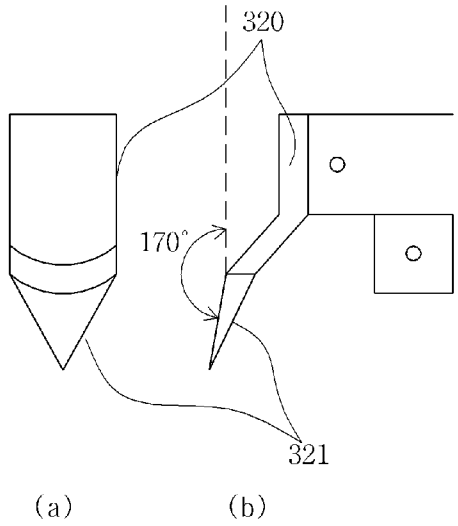
[Fig. 6]


220
170°
221
(a)
(b)

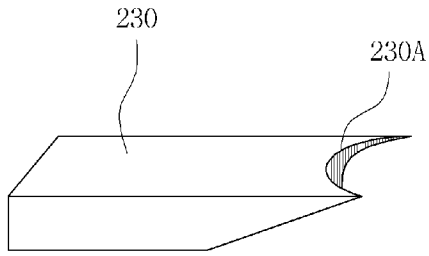
[Fig. 7]



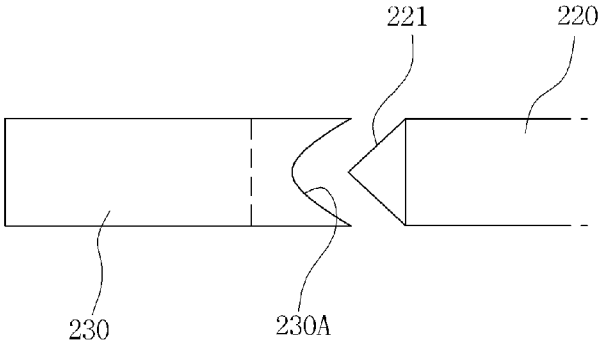
[Fig. 8]



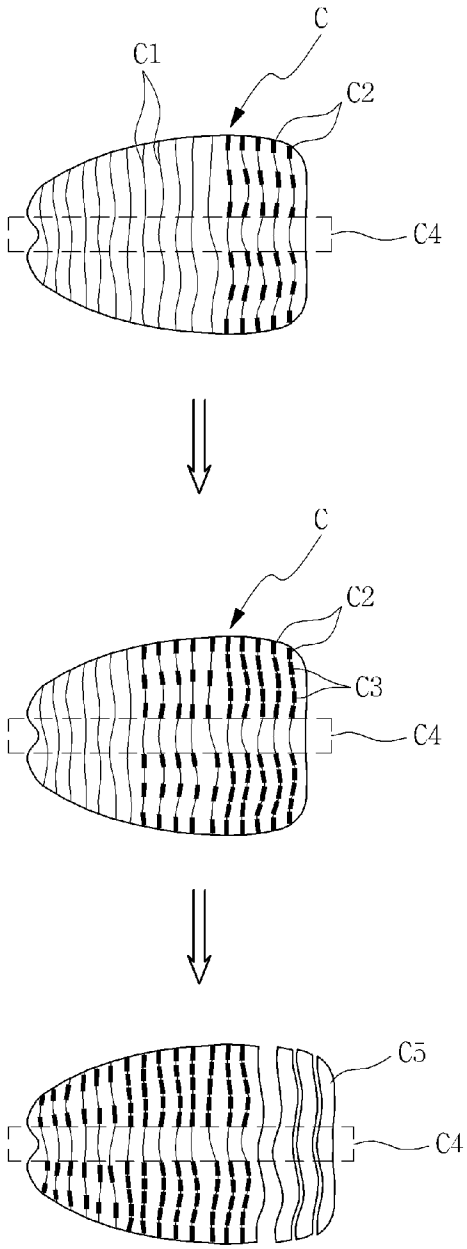
[Fig. 9]



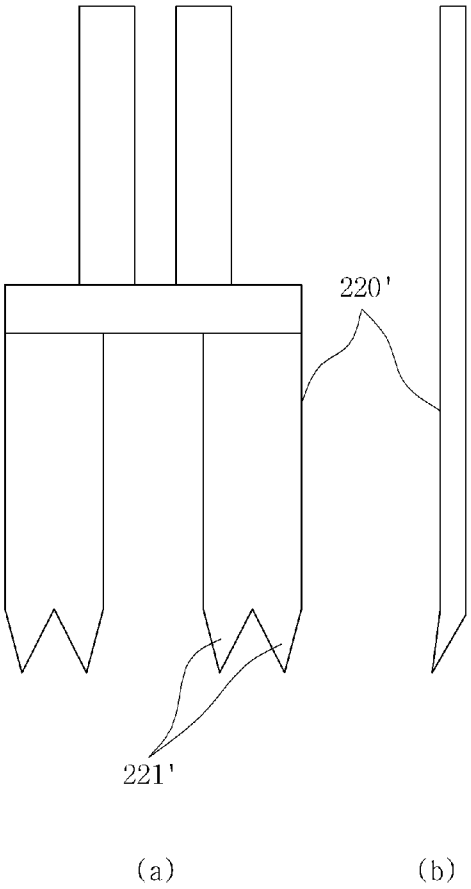
[Fig. 10]



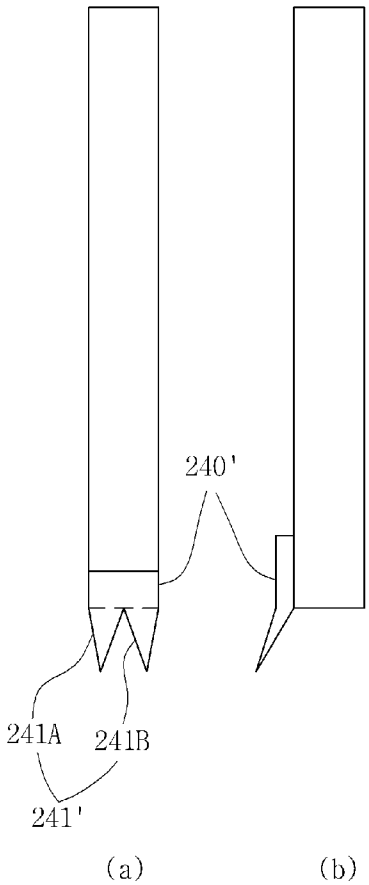
[Fig. 11]



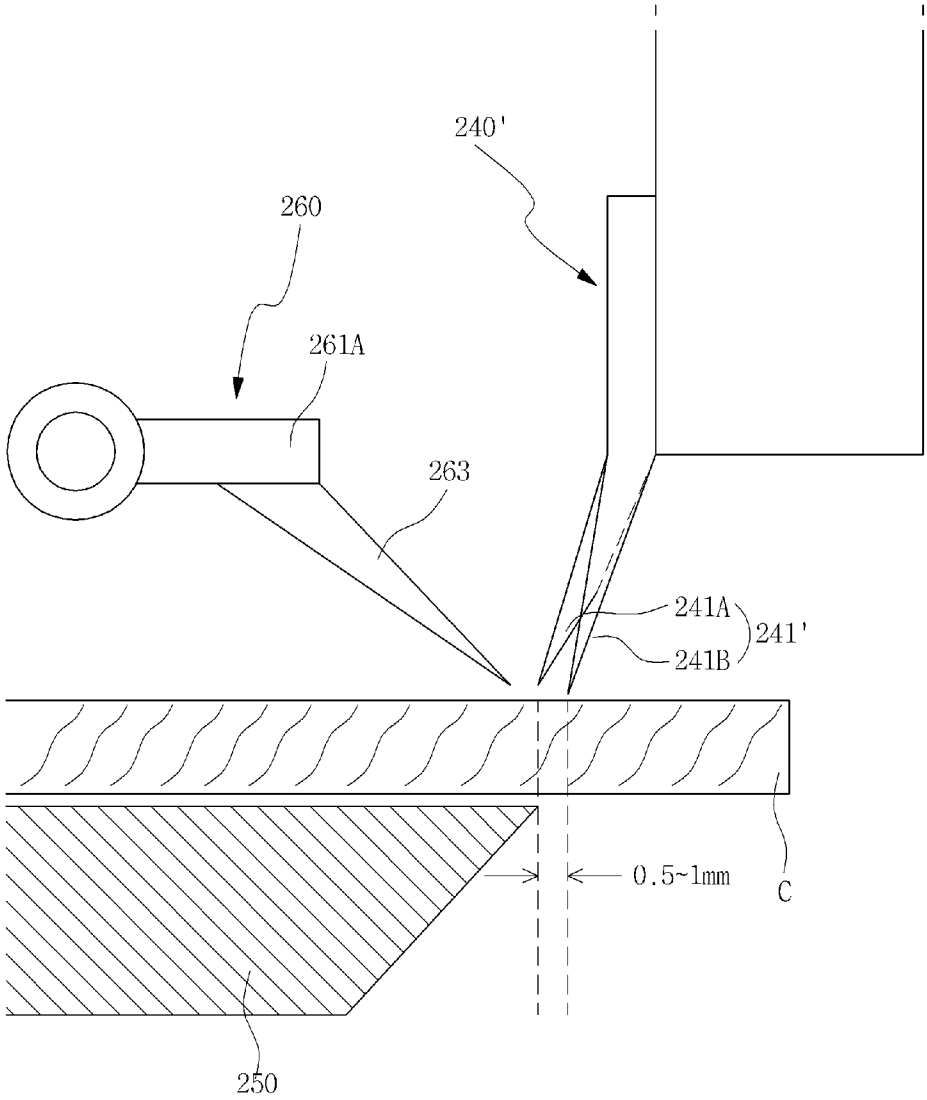
[Fig. 12]



[Fig. 13]



[Fig. 14]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2007/003383

A. CLASSIFICATION OF SUBJECT MATTER

A22C 25/20(2006.01)i

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)

IPC 8 A22C 25/20

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

Korean Patents and Applications for Inventions since 1975
Korean Utility Models and Applications for Utility Models since 1975
Japanese Utility Models and Applications for Utility Models since 1975

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

eKIPASS, Delphion, USPTO, PAJ, IBM "squid, tear, press, etc."

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 200203366 B1 (LEE, KWON-SEOK) 15 November 2000 See the abstract and Figures 1, 3 and 5.	1 - 17
A	JP 10295335 A1 (YAGI HIDEKI) 10 November 1998 See Claims 1-5 and Figures 2-5.	1 - 17
A	KR 200346411 B1 (PARK, JONG-GI) 30 March 2004 See the abstract and Figure 1.	1 - 17
A	JP 6384462 A1 (TOYOYAMA KAZUHIKO) 15 April 1988 See Claims 3-8 and Figures 2-4.	1 - 17

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 FEBRUARY 2008 (26.02.2008)	**26 FEBRUARY 2008 (26.02.2008)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

YOO Min Jeong

Telephone No. 82-42-481-8414

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2007/003383

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR2020000016304	09.06.2000	KR200203366Y1	15.11.2000
JP10295335	10.11.1998	JP10295335A2	10.11.1998
		JP10295335	10.11.1998
		JP3689527B2	31.08.2005
KR200346411	30.03.2004	NONE	
JP63084462	15.04.1988	JP5058701B4	27.08.1993
		JP63084462A2	15.04.1988
		JP63084462	15.04.1988