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(54) **SEAMING DEVICE**

FALZVORRICHTUNG

DISPOSITIF DE SERTISSAGE

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Description

[Technical Field]

[0001] The present invention relates to a seaming device including a washing unit that washes a chuck and a seaming roll that seams a lid to a can.

[Background Art]

[0002] Conventionally, a seaming device is known, which includes a can mounting unit that mounts a can in which a beverage or the like is filled, a chuck unit that is provided facing the can mounting unit, and a seaming roll that seams a lid to a can.

[0003] As shown in, for example, Patent Literature 1, a known seaming device includes: a seaming turret (1) that performs a seaming process of seaming a can and a lid; a carrying-in conveyor (supply conveyor 7) that supplies, to the seaming turret, a can before seaming; a lid conveyance turret (supply turret 3) of a lid supply unit that supplies a lid; a discharge turret (discharge turret 5) that carries out, from the seaming turret, a can after seaming; and a carrying-out conveyor (discharge conveyor 8) that carries out from the discharge turret to outside, a can.

[0004] Each of the seaming turret, the discharge turret, and the lid conveyance turret has, on an outer peripheral part thereof, pockets (fitting concave parts 2, 4, and 6) that separately accommodate and convey a can and a lid.

[0005] The respective pockets of the seaming turret have a can mounting unit (lifter 17) that mounts a can, a chuck unit (seaming chuck device 10) that is provided facing the can mounting unit, and seaming rolls (18 and 19) that seam a lid to a can.

[0006] In the seaming device thus configured, the speeds and timings of the respective turrets and the respective conveyors are adjusted by gears or the like, and the operations of the can mounting units, the chuck units, and the seaming units arranged for the pecks respectively are linked to the rotation of the seaming turret by gears, a cam mechanism, or the like. Thus, a can and a lid conveyed at a high speed can be continuously seamed while being transferred.

[0007] In recent years, high-speed filling has become pervasive in facilities that fill beverages or the like, and the speeding up of seaming processing has been demanded correspondingly. Further, in cans such as beverage cans in which contents are filled, blowing a replacement gas from a gap immediately before lids are put on the opening parts of the cans to remove an oxygen gas inside the cans has been performed in order to prevent the degradation of freshness or flavor due to the oxidization of the contents. Therefore, the contents are scattered from the cans before seaming, thereby causing the attachment of stain on the lateral peripheral surfaces of seaming rolls. If the stain is left for a long period of time, a condition is not favorable from the aspect of hygiene due to the propagation of bacteria or the like. Therefore, periodical washing maintenance is necessary.

[0008] A seaming device according to the preamble of claim 1 is known from US 2019/351524 A1.

[Citation List]

[Patent Literature]

[0009] [Patent Literature 1] Japanese Patent Application Laid-open No. S62-244537

[Summary of Invention]

[Technical Problem]

[0010] The seaming rolls of a seaming device rotate, while revolving with a seaming turret, on axes thereof via cans and lids in cooperation with the rotation of the chucks of chuck units revolving simultaneously with the seaming rolls. Therefore, the chucks cannot rotate on the axes thereof in a case in which no cans and no lids exist. Under the present circumstances, when the seaming rolls are washed or sterilized, it is necessary to stop the operation of the seaming device and then manually rotate the seaming rolls on the axes to be washed, which take a lot of trouble with cleaning. Further, the chucks are positioned on a further inside than the seaming rolls when seen from an outside, and a cleaning person has a difficulty in cleaning the chucks. In addition, it is necessary to cause the seaming turret itself, coupled via gears, to revolve in order to cause the chucks to rotate on the axes so that whole peripheral lateral surfaces thereof are washed.

[0011] Note that in the present invention, a seaming turret is one that performs the seaming process of seaming a lid to a can, and schematically indicates one having a mounting unit that mounts a can, a chuck unit that positions a lid on a can, a movement turret having pockets that support a can barrel, a seaming unit that seams a lid to a can, a housing that contains the above members, and the like that are integrally rotated in the process.

[0012] The present invention has been made in order to solve the above problems and has an object of providing a seaming device that can easily perform the washing operation of a chuck and/or a seaming roll, has high maintainability, and can efficiently keep the chuck and/or the seaming roll clean.

[Solution to Problem]

[0013] In order to solve the above problems, the present invention provides a seaming device including:

a seaming turret including a plurality of chuck units and a plurality of seaming units; and
a washing unit washing chucks of the chuck units and seaming rolls of the seaming units, wherein
the washing unit includes a washing member having

a cleaning brush that is advanceable and retractable along a direction toward the seaming turret from outside when a washing mode is selected, and further includes a washing control mechanism that performs a washing operation to cause the cleaning brush to move toward the seaming turret, with the chucks that are provided in the chuck units being rotatable on axes thereof while stopping revolution of the chuck units by the seaming turret.

[Advantageous Effects of Invention]

[0014] The seaming device of the present invention performs a washing operation to cause the cleaning brush of the washing member to move toward the seaming turret with the chucks provided in the chuck units rotatable on the axes thereof while stopping the revolution of the chuck units by the seaming turret. Thus, the seaming device can facilitate the automatization of the washing operation by stopping the seaming units at a washing position while causing the same to intermittently revolve. Therefore, the seaming device can easily perform the washing operation of the chucks and/or the seaming rolls, have high maintainability, and efficiently keep the chucks and/or the seaming rolls clean.

[0015] In a configuration in which the washing member according to the present invention includes a plurality of washing members, the seaming device includes both a chuck cleaning member and a seaming roll washing member. Therefore, the seaming device can reliably keep both the chucks and the seaming rolls clean. Further, in a configuration in which the seaming device includes a plurality of washing members that wash the seaming rolls (or the chucks), washing is performed a plurality of times for a seaming roll (or a chuck) . Therefore, the seaming deice can perform the washing operation of the seaming rolls (or the chucks) with high operation quality and keep the seaming rolls (or the chucks) cleaner.

[0016] In a configuration in which the washing member according to the present invention includes a chuck washing member, the seaming device can reliably rub the lateral peripheral surfaces of the chucks by causing the chucks to rotate on axes thereof. Further, in a configuration in which the washing member according to the present invention includes a seaming roll washing member, the seaming device can reliably rub the lateral peripheral surfaces of the seaming rolls by causing the seaming rolls to rotate with a driving roller. Therefore, the seaming device can easily perform the washing operation of the chucks and/or the seaming rolls with high operation quality.

[0017] In a configuration in which the washing operation according to the present invention is performed for every prescribed interval of revolution of the chuck units by the seaming turret, the seaming device can facilitate the automatization of the washing operation. Therefore, the seaming device can easily perform the washing operation of the seaming rolls, have high maintainability, and efficiently keep the seaming rolls and the chucks clean.

[0018] In a configuration in which the washing operation according to the present invention is performed for every pitch of the chucks, the seaming device can further facilitate the automatization of the washing operation. Therefore, the seaming device can further reliably and easily perform the washing operation of the seaming rolls, have high maintainability, and efficiently keep the seaming rolls and the chucks clean.

[0019] In a configuration in which the cleaning brush is caused to automatically move toward the seaming turret at a washing position at which the revolution of the chuck units is stopped and the chucks are rotatable on the axes thereof, the seaming device can facilitate the automatization of the washing operation of the seaming units. Therefore, the seaming device can easily perform the washing operation of the seaming rolls, have high maintainability, and efficiently keep the seaming rolls and the chucks clean.

[Brief Description of Drawings]

[0020]

[Fig. 1] Fig. 1 is a schematic view showing an example of the configuration of a seaming device according to an embodiment of the present invention.

[Fig. 2] Fig. 2 is a cross-sectional view showing an example of the configuration of the seaming device according to the embodiment of the present invention.

[Fig. 3] Fig. 3 is an explanatory view of an example of the configuration of the washing unit of the seaming device according to the embodiment of the present invention when seen from the lower surface of a seaming turret.

[Fig. 4] Fig. 4 is a perspective view showing a chuck washing member in Fig. 3 in an enlarged fashion.

[Fig. 5] Fig. 5 is a schematic plan view showing a seaming roll washing member in Fig. 3 in an enlarged fashion.

[Fig. 6] Fig. 6 is a perspective view showing the seaming roll washing member in Fig. 3 in an enlarged fashion.

[Description of Embodiments]

[0021] Hereinafter, the present invention will be described in detail.

[0022] As shown in Fig. 1, a seaming device 100 according to an embodiment of the present invention includes: a seaming turret 101 that performs the seaming process of a can C and a lid F; a carrying-in conveyor 102 that supplies a can C before seaming to the seaming turret 101 in a non-rotated state; a lid supply device 104 that supplies a lid F and includes a lid separation unit 210

and a lid conveyance turret 250; a discharge turret 107 that carries out a can CM after seaming from the seaming turret 101; and a carrying-out conveyor 108 that carries out a can CM from the discharge turret 107 to an outside.

[0023] Each of the seaming turret 101, the discharge turret 107, and the lid conveyance turret 250 has pockets P that separately accommodate and convey cans C and CM and a lid F on their outer peripheral parts, and the carrying-in conveyor 102 has attachments 103 that separately engage and convey a can C.

[0024] The rotation speeds of the seaming turret 101, the discharge turret 107, and the lid conveyance turret 250, the movement speed of the attachments 103 of the carrying-in conveyor 102, and a timing at which the respective pockets P and the attachments 103 are linked to each other are adjustably designed so that cans C and CM and a lid F are smoothly transferred between the respective turrets and the conveyors.

[0025] As shown in Fig. 2, the seaming turret 101 that performs the seaming process of a can C and a lid F includes: a can mounting unit 350 that mounts a can C and rotates the same; a chuck unit 320 that is provided facing the can mounting unit 350 and has a chuck 321 that positions a lid F mounted on a can C and a knockout pad 322 that is fitted to be vertically movable inside the chuck 321 so as to press the lid F mounted on the can C; and a seaming unit 410 having seaming rolls 451 and 452 that seam a lid F to a can C in each of the pockets P.

[0026] The seaming turret 101 is arranged to be rotatable about the center shaft 109 with its central axis X extending in a vertical direction, and is rotationally driven by a driving mechanism 151 of the seaming turret 101.

[0027] The lid separation unit 210, the lid conveyance turret 250, and the carrying-in conveyor 102 are mechanically driven by the driving mechanism 151 of the seaming turret 101 via a transmission mechanism.

[0028] The chuck unit 320 is arranged to be rotatable about the center shaft 109 with its central axis X extending in a vertical direction and face the can mounting unit at an equal angular interval, and an outer surface gear 323 of a rotating shaft that supports the chuck 321 at its lower end engages a sun gear 324 supported by the center shaft 109. The chuck unit 320 revolves with the rotation of the center shaft 109 and a center column, and the chuck 321 rotates on its axis with the engagement between the sun gear 324 and the outer surface gear 323.

[0029] The chuck 321 is provided to be fixed and rotatable in a vertical direction. As shown on the right side of the central axis X in Fig. 2, the centering of a lid F is performed in such a manner that a can C on which the lid F has been mounted by lifting the can mounting unit 350 is fitted with the lower end outer peripheral surface of the chuck 321 while being sandwiched between the knockout pad 322 and the can mounting unit 350.

[0030] The seaming unit 410 performs double seaming with seaming rolls 451 and 452 each pivotally fitted to both ends of a seaming lever 450 so as to rotate, the seaming lever 450 having its central part fixed to the lower end of a revolving roll swinging shaft 132.

[0031] In a double seaming process, a curled portion of a lid F is wrapped into a flange portion of a can C by the seaming roll 451 in primary seaming, and then crimping and bonding are performed by the fastening of seaming roll 452 to maintain sealing in secondary seaming.

[0032] As shown in Fig. 3, the seaming device 100 of the present invention includes a washing unit 500 that washes the chucks 321 of the chuck units 320 and the seaming rolls 451 and 452 of the seaming units 410.

[0033] The washing unit 500 has a chuck washing member 510 and a seaming roll washing member 520 as washing members having cleaning brushes that are advanceable and retractable along a direction toward the seaming turret 101 from an outside. In the present invention, the "cleaning brushes" indicate cleaning parts that are able to exhibit a brush-like cleaning function, are not necessarily limited to those having a shape with a multiplicity of fibers, wires, or the like, and include those having various shapes that will be described later.

[0034] The chuck washing member 510 has a chuck cleaning brush 511 that is inserted between adjacent seaming rolls 451 and 452 and able to contact the peripheral lateral surfaces of the chucks 321. Here, the adjacent seaming rolls 451 and 452 indicate a group of two seaming rolls 451 and 452 for primary and secondary seaming that cooperate with a can C and a lid F positioned by a chuck unit 320. As shown in Fig. 4, the chuck washing member 510 has arms 517 having the chuck cleaning brush 511 fixed at their tip ends. The chuck cleaning brush 511 has a flat substantially rectangular parallelepiped shape that extends in its advancing and retracting direction and its vertical direction and is compressed in a circumferential direction, and has a length with which the cleaning brush 511 is insertable between adjacent seaming rolls 451 and 452 and its tip end reaches the chucks 321 of the chuck units 320. The arms 517 are provided to be expandable and contractable along the advancing and retracting direction of the washing member at the lower part of a support part 516 having its upper part fixed to an in-machine housing serving as a fixation part by bolts 515. On the upper side of the chuck cleaning brush 511 at the tip ends of the arms 517, a nozzle 518 that jets a washing agent to a washing portion is provided.

[0035] In the chuck washing member 510, the chuck cleaning brush 511 and the nozzle 518 constitute a movable unit made integrally advanceable and retractable by the arms 517. The movable unit of the chuck washing member 510 is advanceable and retractable along the radial direction of the central axis X of the seaming turret 101, specifically, along a direction toward between adjacent seaming rolls 451 and 452 from the outside.

[0036] The seaming roll washing member 520 has a driving roller 529 that is able to press both adjacent seaming rolls 451 and 452 and seaming roll cleaning brushes 521 and 522 that are able to contact the two

seaming rolls 451 and 452, respectively. As shown in Fig. 5, the seaming roll washing member 520 has arms 527 having roll brushes and the driving roller 529 such as a rubber roller fixed at their tip ends. As shown in Fig. 6, the driving roller 529 is provided to rotate about its axis parallel to the rotating axes of seaming rolls 451 and 452 by an electrically or pneumatically driven motor 523. At the lower part of a support part 526 having its upper part fixed to the in-machine housing serving as the fixation part by bolts 525, the arms 527 are provided to be expandable and contractable along the advancing and retracting direction of a movable unit. The seaming roll cleaning brushes 521 and 522 contact the peripheral lateral surfaces of seaming rolls 451 and 452 rotated by the driving roller 529, have a flat substantially rectangular parallelepiped shape like the chuck cleaning brush 511 of the chuck washing member 510, and are provided in a posture extending in a direction diagonal to the advancing and retracting direction of the movable unit. Further, nozzles 528 that jet the washing agent to a washing portion are provided on the lateral sides of the seaming roll cleaning brushes 521 and 522.

[0037] In the seaming roll washing member 520, the seaming roll cleaning brushes 521 and 522, the nozzles 528 and 528, and the driving roller 529 constitute the movable unit made integrally advanceable and retractable by the arms 527. The movable unit of the seaming roll washing member 520 is advanceable and retractable along the radial direction of the central axis X of the seaming turret 101, specifically, along a direction toward between adjacent seaming rolls 451 and 452 from the outside.

[0038] The chuck washing member 510 and the seaming roll washing member 520 are, respectively, arranged at adjacent pitch positions according to the revolving pitch of the chuck units 320 by the seaming turret 101.

[0039] Examples of the shapes of the chuck cleaning brush 511 and the seaming roll cleaning brushes 521 and 522 can include a brush shape with a multiplicity of fibers, wires, or the like, a solid sheet shape, a sponge shape, or the like.

[0040] Examples of the materials of the chuck cleaning brush 511 and the seaming roll cleaning brushes 521 and 522 can include nylon, polypropylene, palm, coco, hemp, rubber, nonwoven cloth, or the like.

[0041] Further, the washing agent filled in the nozzles 518 and 528 can be one containing a bactericidal agent such as a hydrogen peroxide solution and ozone water. Further, high temperature steam can also be used as the washing agent.

[0042] The seaming device 100 of the present invention has the washing control mechanism of causing, at the selection of a washing mode, the movable unit including the chuck cleaning brush 511 of the chuck washing member 510 and the movable unit including the seaming roll cleaning brushes 521 and 522 of the seaming roll washing member 520 to automatically move toward the seaming turret 101 along the advancing and retracting direction of the washing members when the chucks 321 provided in the chuck units 320 are rotatable on their axes while the revolution of the chuck unit 320 by the seaming turret 101 is stopped.

[0043] In the washing control mechanism, a washing operation is controlled to be performed for every prescribed interval of the revolution of the chuck units 320 by the seaming turret 101. Specifically, the washing operation is controlled to be performed for every pitch of the chucks 321 by a servo motor that causes the chucks 321 to rotate on their axes.

[0044] The present embodiment describes an example in which the seaming device 100 has the two washing member (the chuck washing member 510 and the seaming roll washing member 520). However, the present invention does not exclude an example in which the seaming device 100 has only one of the chuck washing member 510 and the seaming roll washing member 520. Further, a configuration in which seaming device 100 has a plurality of the chuck washing members 510, a configuration in which seaming device 100 has a plurality of the seaming roll washing members 520, or the like may be employed. Moreover, a configuration in which the seaming device 100 has a plurality of the chuck washing members 510 and a plurality of the seaming roll washing members 520 may be employed.

[0045] The basic operation of the seaming device 100 thus configured will be described.

[0046] A can C to which a lid F has been seamed is conveyed while engaging each of the attachments 103 of the carrying-in conveyor 102 and directed to the seaming turret 101 rotated by the driving mechanism 151 of the seaming turret 101.

[0047] On the other hand, the lid F is cut out one by one from the lid separation unit 210, transferred to each of the pockets P of the lid conveyance turret 250, and directed to the seaming turret 101 by the rotation of the lid conveyance turret 250 (see Fig. 1).

[0048] The speeds and timings of the carrying-in conveyor 102 and the lid conveyance turret 250 are adjusted according to the speed and timing of the seaming turret 101 so that the centers of the can C and the lid F are aligned with each other at a merging point G. When the can mounting unit 350 of which the rotation is controlled via appropriate gears, a cam mechanism, or the like by the driving mechanism 151 to which power has been applied from a driving source not shown is lifted at the merging point G, the lid F is mounted on the can C mounted on the plate 360.

[0049] After that, the can mounting unit 350 is further lifted, the knockout pad 322 inside the chuck 321 presses the lid F, and the chuck 321 of which the rotation is controlled via appropriate gears, a cam mechanism, or the like by the driving mechanism 151 is fitted into the lid F to perform the centering of the lid F. The can C on which the lid F has been mounted is sandwiched between the plate 360, the chuck 321, and the knockout pad 322 at a constant axial load necessary for seaming.

[0050] Then, the seaming turret 101 further rotates, and the plate 360 and the chuck 321 accelerate up to their rotation numbers necessary for seaming before the sandwiched lid F and the can C reach a seaming interval E shown in Fig. 1.

[0051] While passing through the seaming interval E, the seaming lever 450 fixed to the lower end of the roll swinging shaft 132 of the seaming unit 410 is swung. Thus, two seaming rolls 451 and 452 for primary and secondary seaming each pivotally fitted to both ends so as to rotate are sequentially pressed against the can C and the flange of the lid F mounted on the can C from their lateral sides toward the chuck 321 to perform double seaming.

[0052] The can CM having completed the seaming is transferred from the seaming turret 101 to the discharge turret 107 and then transferred from the discharge turret 107 to the carrying-out conveyor 108 to be carried out to a next process such as inspection and packaging.

[0053] In the washing unit 500 of the present invention, the revolution of the chuck units 320 by the driving mechanism 151 of the seaming turret 101 is stopped for every prescribed interval (for every pitch) on the basis of the movement of the servo motor that causes the chucks 321 to rotate on their axes at the selection of a washing mode. At this time, the chuck 321 of one chuck unit 320 is stopped at a first fixed washing position closest to the chuck washing member 510, and the seaming rolls 451 and 452 of the seaming unit 410 corresponding to the adjacent chuck unit 320 are stopped at a second fixed washing position closest to the seaming roll washing member 520.

[0054] In the chuck unit 320 having stopped its revolution at the first fixed washing position, the arms 517 of the chuck washing member 510 extend, and the movable unit including the chuck cleaning brush 511 moves in a direction toward the seaming turret 101 from the outside. Thus, the chuck cleaning brush 511 is inserted between the two seaming rolls 451 and 452 relating to the chuck unit 320, and its tip end is pressed against the peripheral lateral surface of the chuck 321. After that, the chuck 321 is caused to rotate on its axis by the driving mechanism of 151 of the chuck unit 320 without accompanying revolution while the washing agent is jetted from the nozzle 518, and the peripheral lateral surface of the chuck 321 is washed by being rubbed against the chuck cleaning brush 511.

[0055] In the seaming unit 410 having stopped its revolution at the second fixed washing position, the arms 527 of the seaming roll washing member 520 extend, and the movable unit including the seaming roll cleaning brushes 521 and 522 moves in a direction toward the seaming turret 101 from the outside. Then, the driving roller 529 simultaneously presses the seaming rolls 451 and 452, and the tip ends of the seaming roll cleaning brushes 521 and 522 are pressed against the respective peripheral lateral surfaces of the seaming rolls 451 and 452. After that, the seaming rolls 451 and 452 are driven by the rotation of the driving roller 529 while the washing agent is jetted from the nozzles 528 and 528, and the peripheral lateral surfaces of both the seaming rolls 451 and 452 are washed by being rubbed against the seaming roll cleaning brushes 521 and 522.

[0056] When the above two types of washing operations are repeatedly performed over one revolution of the seaming turret 101, the chucks 321 relating to the chuck units 320 and the seaming rolls 451 and 452 of the seaming unit 410 are sequentially washed by the chuck washing member 510 and the seaming roll washing member 520, respectively.

[Reference Signs List]

[0057]

100	Seaming device
101	Seaming turret
102	Carrying-in conveyor
103	Attachment
104	Lid supply device
107	Discharge turret
108	Carrying-out conveyor
109	Center shaft
132	Roll swinging shaft
151	Driving mechanism
210	Lid separation unit
250	Lid conveyance turret
320	Chuck unit
321	Chuck
322	Knockout pad
323	Outer surface gear
324	Sun gear
350	Can mounting unit
360	Plate
410	Seaming unit
450	Seaming lever
451	Seaming roll (primary seaming)
452	Seaming roll (secondary seaming)
500	Washing unit
510	Chuck washing member
511	Chuck cleaning brush
515	Bolt
516	Support part
517	Arm
518	Nozzle
520	Seaming roll washing member
521	Seaming roll cleaning brush
522	Seaming roll cleaning brush
523	Motor
525	Bolt
526	Support part
527	Arm
528	Nozzle
529	Driving roller
C	Can (before seaming)
F	Lid

CM Can (after seaming)
P Pocket
E Seaming interval
X Central axis

Claims

1. A seaming device (100) comprising:

a seaming turret (101) including a plurality of chuck units (320) and a plurality of seaming units (410); and
a washing unit (500) configured to wash seaming rolls (451, 452) of the seaming units, wherein the washing unit includes a washing member (510, 520) having a cleaning brush (511, 521, 522) that is advanceable and retractable along a direction toward the seaming turret from outside when a washing mode is selected, the seaming device being **characterized in that**
the washing unit is further configured to wash chucks (521) of the chuck units, and
the seaming device further includes a washing control mechanism that performs a washing operation to cause the cleaning brush to move toward the seaming turret, with the chucks that are provided in the chuck units being rotatable on axes thereof while stopping revolution of the chuck units by the seaming turret.

2. The seaming device according to claim 1, wherein the washing member is provided in plurality.

3. The seaming device according to claim 1 or 2, wherein

the washing member is a chuck washing member (510) having a chuck cleaning brush (511) that is inserted between adjacent seaming rolls(451, 452) and
able to contact the chucks a (321) and/or a seaming roll washing member (520) having a driving roller (529)
that is able to press both adjacent seaming rolls and a seaming roll cleaning brush (521, 522) that is able to contact the seaming rolls.

4. The seaming device according to any of claims 1 to 3, wherein
the washing control mechanism performs control so that a washing operation is performed for every prescribed interval of revolution of the chuck units by the seaming turret.

5. The seaming device according to claim 4, wherein the washing control mechanism performs control so that a washing operation is performed for every pitch of the chucks.

6. The seaming device according to any of claims 1 to 5, wherein
the washing control mechanism causes the cleaning brush to automatically move toward the seaming turret when the chucks provided in the chuck units are rotatable on axes thereof while revolution of the chuck units by the seaming turret is stopped.

Patentansprüche

1. Falzvorrichtung (100) mit:

einem Falzrevolver (101) mit mehreren Spannfuttereinheiten (320) und mehreren Falzeinheiten (410); und
einer Wascheinheit (500), die dazu ausgebildet ist, Falzrollen (451, 452) der Falzeinheiten zu waschen, wobei die Wascheinheit ein Waschelement (510, 520) mit einer Reinigungsbürste (511, 521, 522) aufweist, welche, wenn ein Waschmodus gewählt ist, von außen entlang einer zum Falzrevolver gerichteten Richtung vor- und zurückbewegbar ist,
wobei die Falzvorrichtung **dadurch gekennzeichnet ist, dass** die Wascheinheit ferner dazu ausgebildet ist, Spannfutter (521) der Spannfuttereinheiten zu waschen, und dass die Falzvorrichtung ferner einen Waschsteuermechanismus aufweist, welcher einen Waschvorgang durchführt, um die Reinigungsbürste zu veranlassen, sich in Richtung des Falzrevolvers zu bewegen, wobei die in den Spannfuttereinheiten vorgesehenen Spannfutter auf Achsen derselben drehbar sind, während das Drehen der Spannfuttereinheiten durch den Falzrevolver gestoppt ist.

2. Falzvorrichtung nach Anspruch 1, bei welcher das Waschelement mehrfach vorgesehen ist.

3. Falzvorrichtung nach Anspruch 1 oder 2, bei welcher das Waschelement ein Spannfutterwaschelement (510) mit einer Spannfutterreinigungsbürste (511) ist, welche zwischen benachbarte Falzrollen (451, 452) eingesetzt ist und in der Lage ist, die Spannfutter (321) zu berühren, und/oder ein Falzrollenwaschelement (520) mit einer Antriebsrolle (529) ist, die in der Lage ist, gegen beide benachbarten Falzrollen zu drücken, und einer Falzrollenreinigungsbürste (521, 522), die in der Lage ist, die Falzrollen zu berühren.

4. Falzvorrichtung nach einem der Ansprüche 1 bis 3, bei welcher der Waschsteuermechanismus eine Steuerung derart durchführt, dass ein Waschvorgang zu jedem vorgeschriebenen Drehintervall der Spannfuttereinheiten durch den Falzrevolver durch-

geführt wird.

5. Falzvorrichtung nach Anspruch 4, bei welcher der Waschsteuermechanismus eine Steuerung derart durchführt, dass ein Waschvorgang für jede Teilung der Spannfutter durchgeführt wird.

6. Falzvorrichtung nach einem der Ansprüche 1 bis 5, bei welcher der Waschsteuermechanismus die Reinigungsbürste veranlasst, sich automatisch in Richtung des Salzrevolvers zu bewegen, wenn die in den Spannfuttereinheiten vorgesehenen Spannfutter auf Achsen derselben drehbar sind, während das Drehen der Spannfuttereinheiten durch den Falzrevolver gestoppt ist.

Revendications

1. Dispositif de sertissage (100), comprenant :

une tourelle de sertissage (101) incluant une pluralité d'unités de mandrin (320) et une pluralité d'unités de sertissage (410) ; et
une unité de lavage (500) configurée pour laver des rouleaux de sertissage (451, 452) des unités de sertissage, dans lequel l'unité de lavage inclut un élément de lavage (510, 520) présentant une brosse de nettoyage (511, 521, 522) qui peut être avancée et rétractée le long d'une direction vers la tourelle de sertissage depuis l'extérieur lorsqu'un mode de lavage est sélectionné,
le dispositif de sertissage étant **caractérisé en ce que**
l'unité de lavage est en outre configurée pour laver les mandrins (521) des unités de mandrin, et
le dispositif de sertissage inclut en outre un mécanisme de commande de lavage qui effectue une opération de lavage pour amener la brosse de nettoyage à se déplacer vers la tourelle de sertissage, les mandrins qui sont prévus dans les unités de mandrin pouvant tourner sur leurs axes tout en arrêtant la rotation des unités de mandrin par l'intermédiaire de la tourelle de sertissage.

2. Dispositif de sertissage selon la revendication 1, dans lequel
l'élément de lavage est prévu en pluralité.

3. Dispositif de sertissage selon la revendication 1 ou 2, dans lequel
l'élément de lavage est un élément de lavage de mandrin (510) présentant une brosse de nettoyage de mandrin (511) qui est insérée entre des rouleaux de sertissage (451, 452) adjacents et capable de venir en contact avec les mandrins (321) et/ou un élément de lavage de rouleau de sertissage (520) présentant un rouleau d'entraînement (529) qui est capable de presser des rouleaux de sertissage adjacents, et une brosse de nettoyage de rouleau de sertissage (521, 522) qui est capable de venir en contact avec les rouleaux de sertissage.

4. Dispositif de sertissage selon l'une quelconque des revendications 1 à 3, dans lequel
le mécanisme de commande de lavage effectue une commande de telle sorte qu'une opération de lavage est effectuée pour chaque intervalle de rotation prescrit des unités de mandrin par la tourelle de sertissage.

5. Dispositif de sertissage selon la revendication 4, dans lequel
le mécanisme de commande de lavage effectue une commande de sorte qu'une opération de lavage est effectuée pour chaque pas des mandrins.

6. Dispositif de sertissage selon l'une quelconque des revendications 1 à 5, dans lequel
le mécanisme de commande de lavage amène la brosse de nettoyage à se déplacer automatiquement vers la tourelle de sertissage lorsque les mandrins prévus dans les unités de mandrin peuvent tourner sur leurs axes tandis que la rotation des unités de mandrin par la tourelle de sertissage est arrêtée.

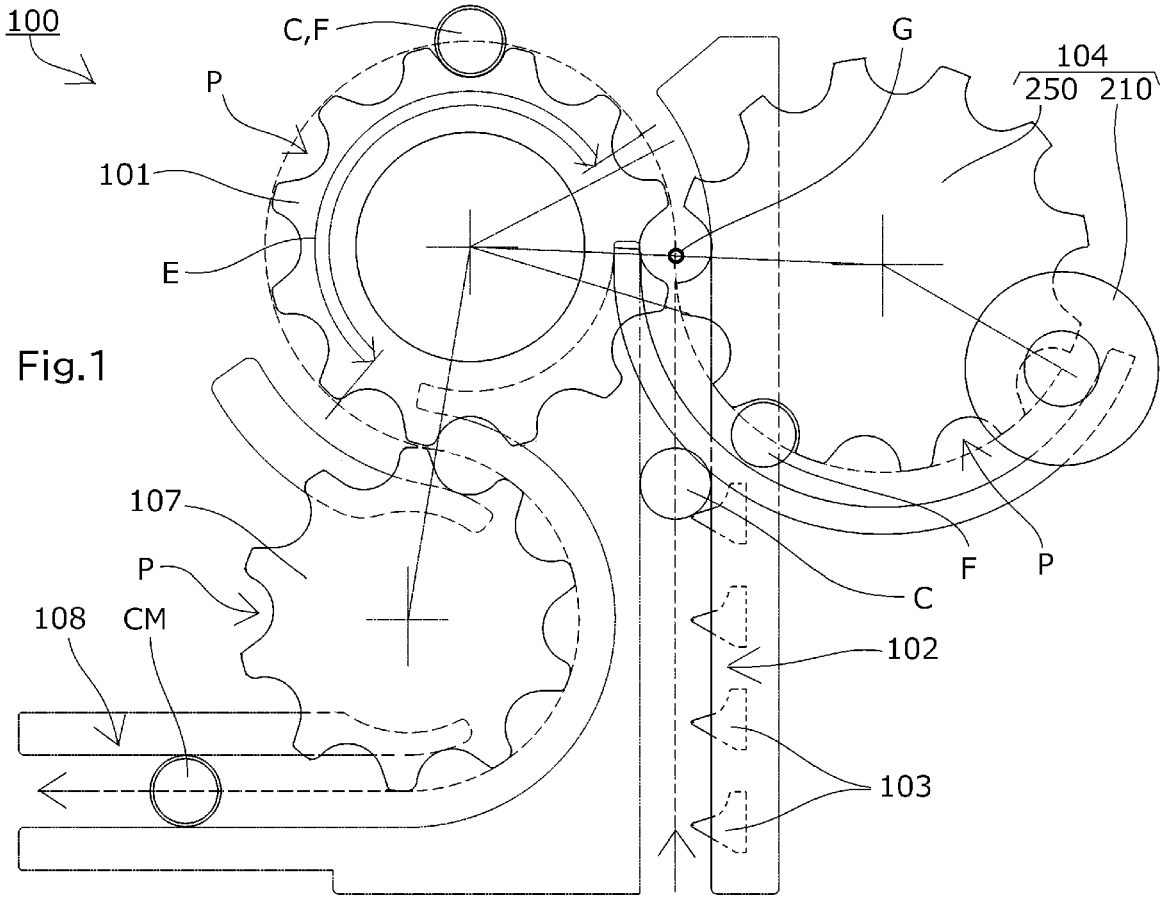

Fig.1

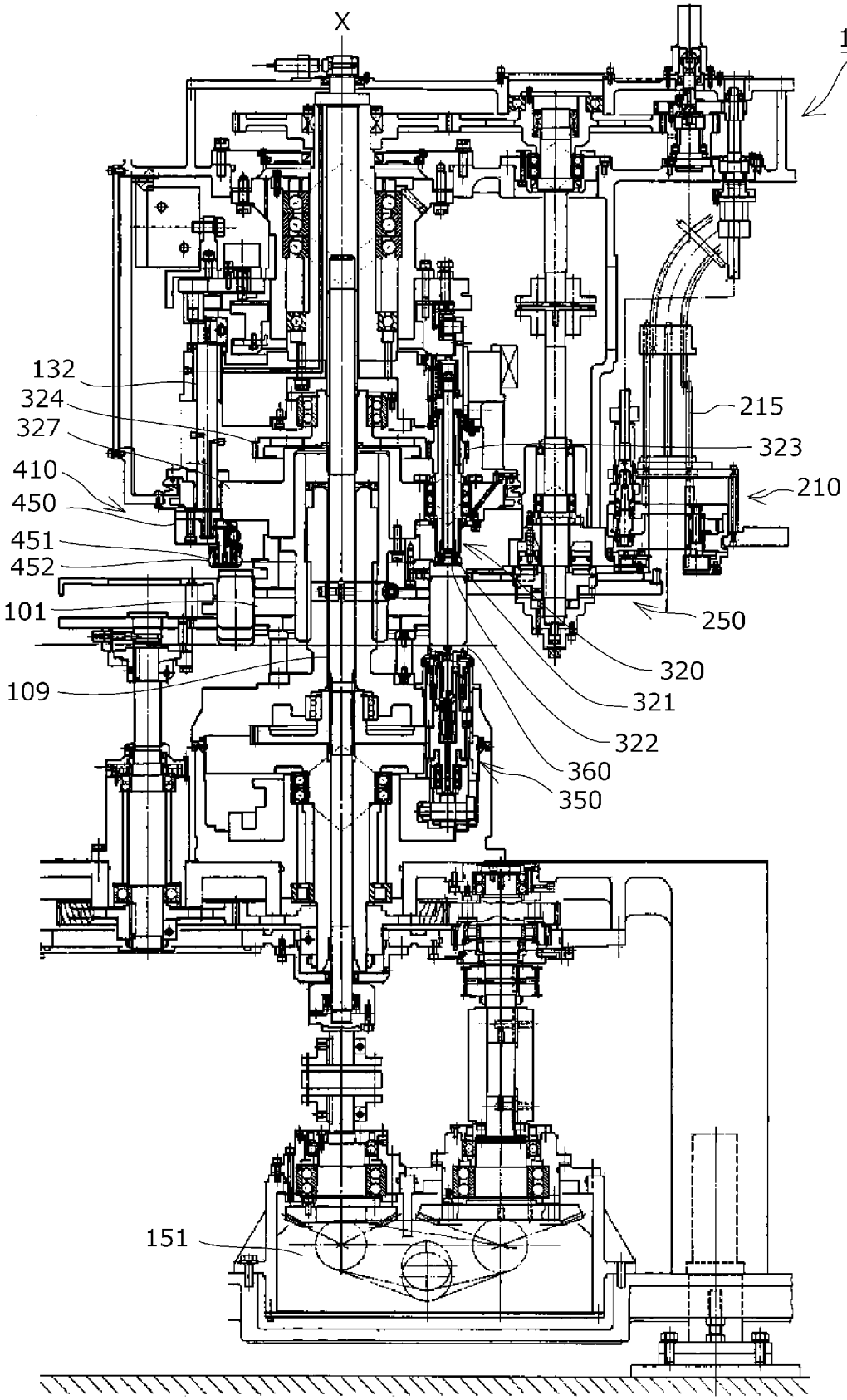
X
100
132
324
327
410
450
451
452
101
109
151
215
323
210
250
320
321
322
360
350

Fig.2

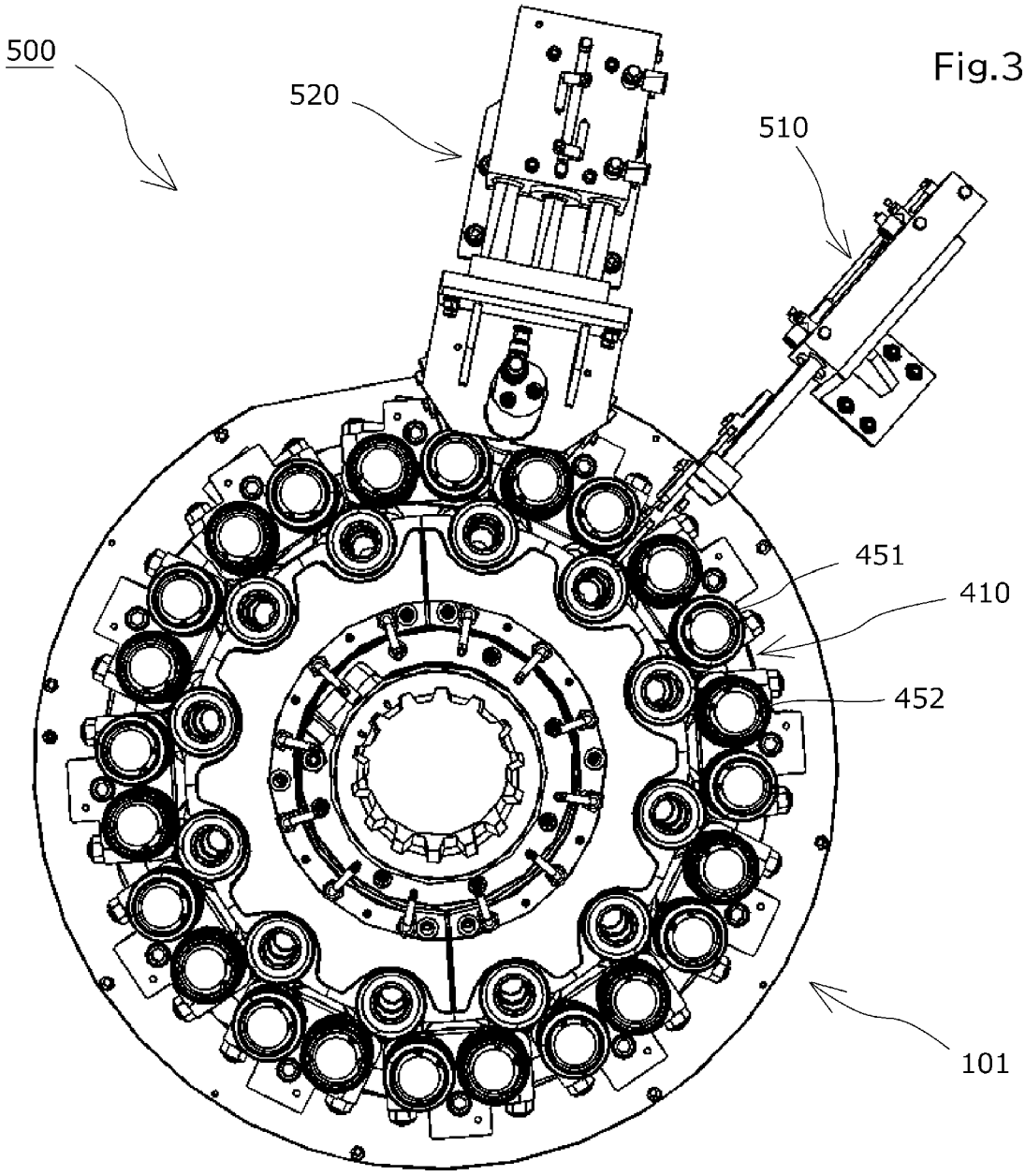

Fig.3

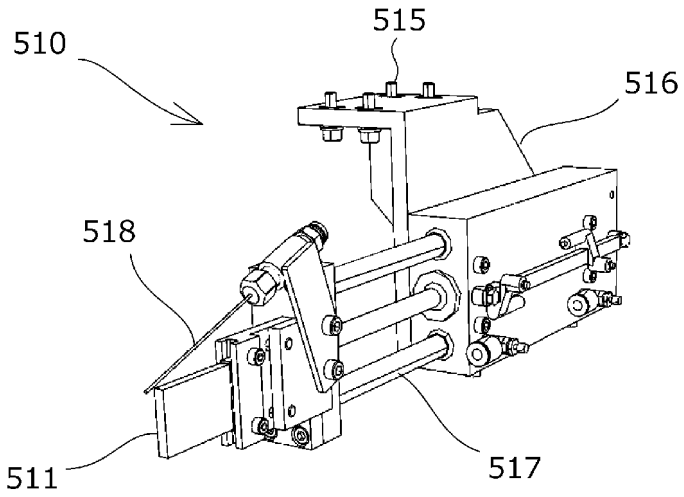
510
515
516
518
511
517

Fig.4

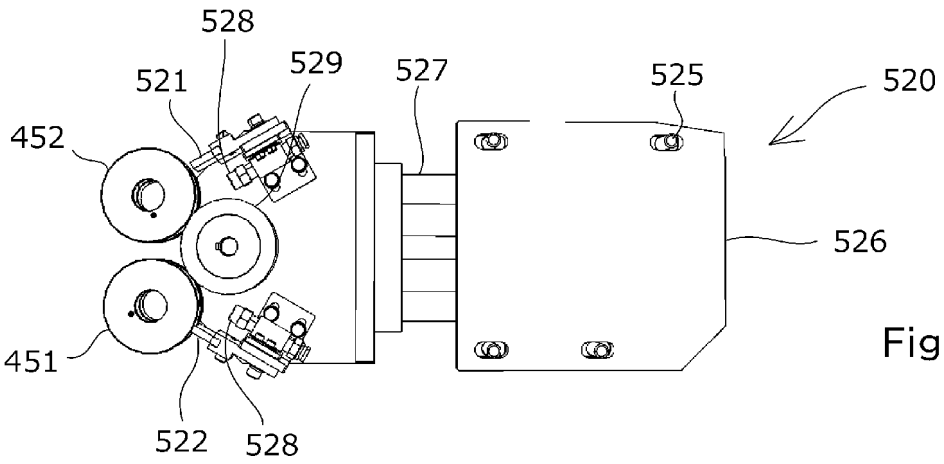
528
521
529
527
525
520
452
526
451
522
528

Fig.5

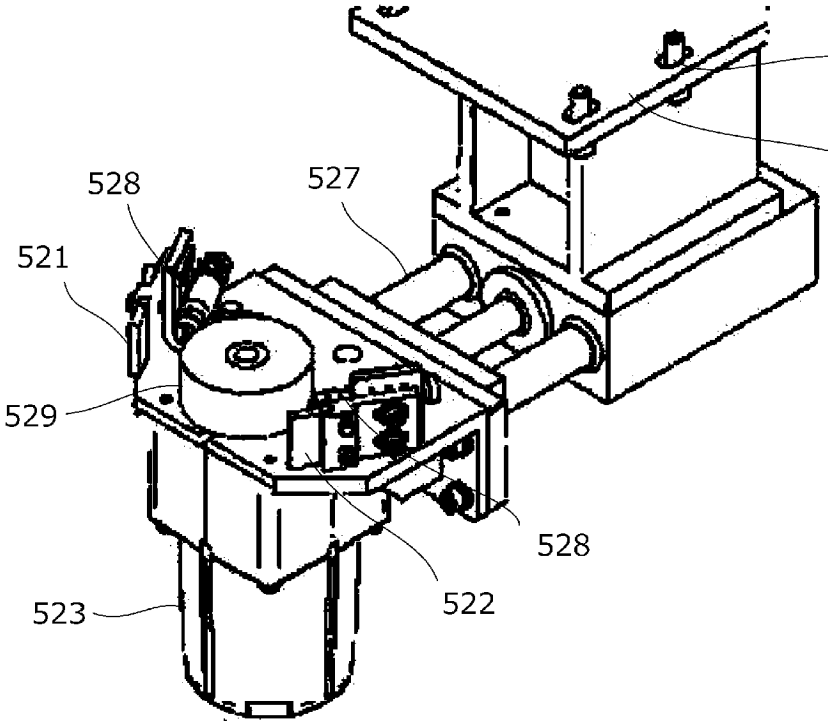

Fig.6

REFERENCES CITED IN THE DESCRIPTION

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