

DESCRIPTION

Title of Invention

STORING AND OUTPUTTING DEVICE

5

[Technical Field]

[0001]

The present invention relates to a storing and
outputting device including a storing unit of a rotary drum
10 type.

[Background Art]

[0002]

Conventionally, a storing and outputting device has
been known which includes a storing unit that compresses and
15 temporarily stores a process target, such as waste collected
in an apartment house or a commercial facility, and
appropriately outputs the stored target to a waste
collection vehicle or the like. Inside the storing unit, a
blade plate arranged in a spiral shape along the inner
20 peripheral surface is provided. By rotating the storing
unit, the process target is pushed into the back of the
storing unit by the blade plate (feeding blade), and is
compressed.

[0003]

25 In a storing and outputting device of this type, a

structure for controlling the flow and movement of a process target inside the storage unit is sometimes installed in the vicinity of the inputting port. For example, Patent Document 1 describes a waste storing device in which a semi-cylindrical insertion portion is fixed in the vicinity of an inputting port of a rotary drum that stores waste.

The insertion portion is arranged such that the central axis is eccentric with in the direction of transporting the waste respect to the center of the rotary drum. Further, the radial gap between the circumference surface of the insertion portion and the inner circumference surface of the rotary drum is set to be narrower at the front side of the rotation (downstream side of the rotation from the inputting port) than at the rear side in the rotation direction (upstream side of the rotation from the inputting port) (see Patent Document 1).

[Citation List]

[Patent Document]

[0004]

[Patent Document 1] JP 2010-083621 A

[Summary of Invention]

[Technical Subject]

[0005]

However, with the gap on the front side in the direction of rotation set to be narrow, when process targets

are input to almost full, the process target transported to the front side having a narrow gap is easily clogged and accumulated in the gap. This causes inconvenience that a process target that cannot be fed to the front side returns
5 to the vicinity of the inputting port and is accumulated there, so that a sufficient storage capacity cannot be obtained. In addition, the load of the driving device that drives the rotary drum may increase due to biting of a process target. Therefore, there is a risk of damaging or
10 breaking the device due to overload.

[0006]

The present invention has been devised in view of the above-described subject, and an object of the present invention is to provide a storing and outputting device
15 capable of efficiently and smoothly compressing a process target to increase the storage capacity.

[Subject to be solved]

[0007]

A storing and outputting device disclosed herein
20 includes: a storing unit that is formed to be rotatable around a rotation center axis extending in a substantial horizontal direction, is in a cylindrical shape having an inputting unit and an outputting unit, the inputting unit being provided with an opening in a first end side, and the
25 outputting unit being provided with an outputting port that

is openable and closable and outputs a process target in a second end side, the storing unit having a feeding blade spirally arranged on an inner circumference surface from the first end side to the second end side; an input-side

- 5 supporting part that is provided with an inputting port in which the process target is input, seals the storing unit at the inputting unit, and rotatably supports the storing unit; and a baffle plate part that protrudes from a peripheral portion of the inputting port toward the second end side.
- 10 The baffle plate part includes a communicating hole that is communicated to the storing unit and supplies the process target to the storing unit from the inputting port, and a protrusion part that is formed on a side face of the baffle plate part, the side face being on a side along which the
- 15 process target is scraped up by rotation of the storing unit in a direction of rotation that transports the process target from the first end side to the second end side and being one of left and right sides defined by a vertical face passing through the rotation center axis, the protrusion
- 20 part protruding so as to have a distance to the side face on the inner circumference surface of the storing unit gradually narrowing and then gradually widening along the direction of rotation.

[Advantageous Effects of Invention]

The storing and outputting device of the disclosure can efficiently and smoothly compress a process target to increase the storage capacity.

[Brief Description of Drawings]

5 [0009]

FIG. 1 is a perspective view showing the structure of a storing and outputting device according to an embodiment.

FIG. 2 is a side view of the storing and outputting device of FIG. 1.

10 FIG. 3(A) is a front view of a baffle plate part shown in FIG. 2, FIG. 3(B) is a cross-sectional view of the baffle plate part; and FIG. 3(C) is a perspective view of the baffle plate part.

FIGs. 4(A)-4(D) are diagrams showing movement of a
15 process target in the storing unit (front view of the baffle plate part).

FIG. 5 is a diagram showing movement of a process target in the storing unit (cross-sectional view of the baffle plate part).

20 FIGs. 6(A)-6(E) are diagrams showing the configuration of a storing and outputting device according to a modification; FIGs. 6(A) and 6(B) are front views of the baffle plate part, FIG. 6(C) is a perspective view of the baffle plate part, the FIG. 6(D) is a side view of the
25 baffle plate part, and FIG. 6(E) is a cross-sectional view

of the baffle plate part.

[Description of Embodiments]

[0010]

Hereinafter, a storing and outputting device according
5 to an embodiment and a modification will be described with
reference to FIGs. 1-6. The embodiment and the modification
described below are merely examples, and there is no
intention of excluding applications of various modifications
or techniques which are not specified in the following
10 embodiment. Respective configurations of the present
embodiment can be modified and implemented in various ways
within the scope not departing from the concepts. In
addition, the respective configurations except for the
configuration essential to the present invention can be
15 selected when necessary, or can be appropriately combined
with each other.

[0011]

[1. Structure]

FIG. 1 is a perspective view showing the structure of a
20 storing and outputting device 10 according to an embodiment.
The storing and outputting device 10 includes a storing unit
1 (rotary drum) which is a hollow cylindrical member for
temporarily storing a process target "G" (garbage). The
storing unit 1 is rotatably provided on a mount 14. An
25 example of the mount 14 is a frame constructed by combining

steel materials and pipes, and is supported on the ground by multiple support legs. Between the storing unit 1 and the mount 14, supporting rollers 15 that support the storing unit 1 rotatably around the cylinder axis "C" (rotation center axis) thereof are sandwiched.

[0012]

The storing unit 1 shown in FIG. 1 is formed in a cylindrical shape that is rotatable around the cylinder axis "C". In one end side of the storing unit 1 in the axial direction (the direction along the cylinder axis "C"), an inputting unit 2 is provided. The inputting unit 2 has an opening serving as an inputting port of a process target "G". The inputting unit 2 is formed into a substantially cylindrical shape having a diameter equal to or smaller than the maximum diameter of the storing unit 1 with the cylinder axis "C" as a center. The inputting unit 2 is closed by an input-side supporting part 5 to be described below. The inputting unit 2 may have a tapered portion that expands toward the opening on the basis of the cylinder axis "C".

In the other end side of the storing unit 1 in the axial direction of the storing unit 1, an outputting unit 3 is provided. The outputting unit 3 has an outputting port 8 serving as an exit side of the process target "G". The outputting unit 3 is formed into a substantially cylindrical shape having a diameter equal to or smaller than the maximum

diameter of the storing unit 1 with the cylinder axis "C" as a center. The outputting unit 3 is closed by an outputting port cover 11 to be described below. The outputting unit 3 may have a tapered portion that expands toward the

5 outputting port 8 on the basis of the cylinder axis "C".

In the following description, along the direction of the cylinder axis "C" of the storing unit 1, the side on which the process target "G" is output is simply referred to as the output side, and the side on which the process target
10 "G" is input is simply referred to as the input side.

[0013]

Inside the storing unit 1, a feeding blade 4 erected inward from the inner circumference surface 9 is provided. The feeding blade 4 is spirally arranged on the inner
15 circumference surface 9 of the storing unit 1 from one end to the other end in the axial direction of the storing unit 1. By rotating the storing unit 1 around the cylinder axis "C", the apparent position of the feeding blade 4 with respect to the inner circumference surface 9 moves in the
20 direction along the cylinder axis "C". Thereby, the process target "G" stored in the storing unit 1 is pressed against the feeding blade 4 along the cylinder axis "C", and is transported from one end side (input end side, first end side) to the other end side (output end side, second end
25 side) of the storing unit 1.

[0014]

The storing unit 1 is rotationally driven by a non-illustrated driving device such as a motor or an actuator. The operating state of the driving device may be controlled manually or may be controlled automatically by an electronic control unit. Further, for rotationally driving the storing unit 1, the rotation is facilitated by attaching gears and/or pulleys to the outer circumference of the storing unit 1, or a transmission or various power transmission devices (e.g., a gear, a chain, and/or a timing belt) may be interposed between the driving device and the storing unit 1.

[0015]

The storing unit 1 of the embodiment is configured to rotate counterclockwise as viewed from the output side, and is configured to be rotatable also in a clockwise direction as needed. In the example shown in FIG. 1, the direction in which the spiral feeding blade 4 extends in the direction of transport while rotating about the cylinder axis "C" is set to the left-hand direction. In contrast, the direction of rotation of the storing unit 1 on the basis of the direction of transport of the process target "G" is set to be the right-handed direction (reverse rotational direction to the left-hand direction). The extending direction of the cylinder axis "C" may be horizontal, may be inclined

downward from the input side to the output side, or may be inclined upward from the input side and output side.

Further, thrust bearing parts 32 may be provided on the output side of the mount 14. The thrust bearing parts 32
5 may support the storing unit 1 in the direction along the cylinder axis "C" via the thrust supporting part 33 disposed on outer circumference of the outputting unit 3, and may be subjected to the load acting in the extending direction of the cylinder axis "C" which load is caused by pressing and
10 storing the process target "G".

[0016]

The input-side supporting part 5 has a function of rotatably supporting the storing unit 1 and sealing the storing unit 1 at the inputting unit 2. The input-side
15 supporting part 5 is, for example, a plate-shaped member larger than the outer diameter of the one end of the storing unit 1, and rotatably supports the storing unit 1 via a sliding member such as a non-illustrated bearing having a diameter corresponding to the inputting unit 2. In other
20 words, the storing unit 1 is supported so as to be rotatably around the cylinder axis "C" in a posture in which one end surface in the direction along the cylinder axis "C" is closed by the input-side supporting part 5. The input-side supporting part 5 is fixed to the mount 14, and the input-
25 side supporting part 5 does not rotate while the storing

unit 1 is rotating.

[0017]

As shown in FIG. 2, the input-side supporting part 5 is provided with an inputting port 6 which is an opening to input a process target "G" into the storing unit 1. The inputting port 6 is provided with an inputting port door 7 for openably closes the inputting port 6. Alternatively, a non-illustrated inputting chute may be connected to the inputting port 6, and in this case, a process target may be supplied from the inputting port door 7 installed in another space partitioned by a wall or the like using the input chute. If a human operator opens the inputting port door 7 to input the process target "G", the inputting port 6 is closed by the inputting port door 7 except for at the time of inputting, and is locked by, for example, a mechanical key or an electronic key. Alternatively, the process target "G" may be input into the inputting port 6 by a mechanical inputting device.

[0018]

As shown by a thin solid line in FIG. 3(B), a bucket 13 having an opening of which orientation is changed in response to opening and closing of the inputting port door 7 and being formed into a shape temporarily containable a process target "G" is fixed to the inner side of the inputting port door 7. A process target "G" which is

inputted into the bucket 13 with an opening directed to the outside of the inputting port 6 under a state where the inputting port door 7 is opened flows down to the inside of the storing unit 1 because, when the inputting port door 7 is closed, the opening of the bucket 13 comes to direct to the inside of the storing unit 1. Alternatively, instead of the bucket 13, or in downside of the bucket 13, a chute inclined to the output side may be installed. By providing the chute, the process target "G" is input into the storing unit 1 without remaining in the vicinity of the inputting port 6.

[0019]

The outputting port cover 11 is driven to open and closes by an opening and closing device 12 and thereby openably closes the outputting port 8. When the outputting port 8 is in the closed state, the outputting port cover 11 closes the outputting port 8 in a rotatably sealed state.

[0020]

At the peripheral portion of the inputting port 6 of the input-side supporting part 5 serving as the one end side of the inside of the storing unit 1, a baffle plate part 20 formed into a shape protruding toward the other end side is installed. The baffle plate part 20 is provided with at least a communicating port 21 and a protrusion part 22. The baffle plate part 20 of the embodiment is formed in an

asymmetrical (non-mirror symmetrical) shape with respect to a vertical plane passing through the cylinder axis "C". In addition to these, the baffle plate part 20 illustrated in FIGs. 3(A)-3(C) is provided with a tip end surface 23, an upper inclined surface 24, a lower inclined surface 25, an upper side surface 26, and a lower side surface 27.

[0021]

The communicating port 21 is an opening serving as a passage through which a process target "G" input from the inputting port 6 is introduced into the storing unit 1, and is formed so as to be communicated with the storing unit 1. As illustrated in FIGs. 3(A)-3(C), the communication port 21 is disposed at a lower portion (on the lower surface) of the baffle plate part 20. Incidentally, as shown by the thin solid line in FIG. 3(B), if the bucket 13, a chute, and the like is provided inside the inputting port door 7, a communication port 21 having a size that does not interfere with them is formed.

[0022]

In the baffle plate part 20, the protrusion part 22 is provided on a side face being on a side (right side in FIG. 3(A)) along which the process target "G" being scraped up in the direction of rotation of the storing unit 1 that transports the process target "G" from the one end side to the other end side, the side is one of the left and right

sides defined by a vertical face "V" (indicated by a broken line in FIG. 3(A)) passing through the cylinder axis "C".

The protrusion part 22 is protruded so as to have a distance to the side face on the inner circumference surface 9 of the

5 storing unit 1 gradually narrowing and then gradually widening along the direction of rotation. The protrusion part 22 illustrated in FIG. 3(A) is provided at a lower portion of a side surface of the baffle plate part 20. The protrusion part 22 is formed in a substantially triangular
10 prism shape extending from the plate surface of the input-side supporting part 5 toward the output side, and includes a protruding upper surface part 28, a protruding lower surface part 29, and a protruding tip surface 30. The protruding upper surface part 28 and the protruding lower
15 surface part 29 form a portion corresponding to the side surfaces of the substantially triangular prism, and the protruding tip surface 30 forms a portion corresponding to the top surface of the substantially triangular prism.

[0023]

20 The protruding upper surface part 28 is a planar portion that is disposed on the upper portion of the protrusion part 22 and has an upward normal, and the protruding lower surface part 29 is a planar portion that is disposed on the lower portion of the protrusion part 22 and
25 has a downward normal. The distance (gap dimension) between

the protrusion part 22 and the inner circumference surface 9 of the storing unit 1 in the cross section perpendicular to the cylinder axis "C" comes to be the smallest at the boundary between the protruding upper surface part 28 and the protruding lower surface part 29. In the example illustrated in FIG. 3(A), the gap distance of the ridge line of the protruding upper surface part 28 and the protruding lower surface part 29 comes to be the smallest at the end portion on the output side. The protruding tip surface 30 is a portion forming the end surface on the output side of the protrusion part 22, and is connected between a lower inclined surface 25 and a protruding upper surface part 28, which will be described below, into a planar shape.

[0024]

The tip end surface 23 (tip end) is a portion forming an end surface on the output side in the baffle plate part 20. Further, the upper inclined surface 24 is a planar portion disposed on the upper portion of the baffle plate part 20 and having an upward normal, and is formed so as to be inclined upward from the tip end surface 23 to the input side. The upper inclined surfaces 24 are provided one to each of the right side and the left side in FIG. 3(A). Further, the lower inclined surface 25 is a planar portion disposed at a lower portion of the baffle plate part 20 and having a downward normal, and is formed so as to be inclined

downward from the tip end surface 23 to the input side. The lower end of the lower inclined surface 25 can be arranged below the lower end of the inputting port 6. By forming the lower inclined surface 25 in this way, it is possible to enhance the effect of suppressing the return of the input processing target G to the input side.

[0025]

The tip end surface 23 is formed to protrude to a position where the lower inclined surface 25 crosses at least the feeding blade 4 when the baffle plate part 20 is viewed from the radially outer side toward the radially inner side of the storing unit 1. In other words, the protruding length of the baffle plate part 20 is set such that the distance between the portion of the feeding blade 4 closest to the inputting unit 2 and the inputting unit 2 is shorter than the distance from the inputting unit 2 to the tip end surface 23.

[0026]

The upper side surface 26 is a planar portion disposed on the side of the tip end surface 23, and is provided so as to connect the tip end surface 23 and the upper inclined surface 24 into a planar shape. The upper side surfaces 26 are provided one to each of the right side and the left side in FIG. 3(A) on the basis of the tip end surface 23.

Further, the lower side surface 27 is a planar portion

disposed on the side of the lower inclined surface 25, and is provided so as to connect the lower inclined surface 25 and the upper side surface 26 into a planar shape. The lower side surface 27 is provided only on the left side in FIG. 3(A) on the basis of the lower inclined surface 25. On the right side of the lower inclined surface 25, the above-described protrusion part 22 is provided so as to protrude. Alternatively, the lower side surface 27 may also be provided on the right side in FIG. 3(A) on the basis of the lower inclined surface 25, and the protrusion part 22 may be provided on the lower side surface 27 so as to protrude.

[0027]

The process target "G" input from the inputting port 6 is supplied to the inside of the storing unit 1 through the communicating port 21 of the baffle plate part 20. The process target "G" is scraped up by the rotation of the storing unit 1, then falls, and is scraped up again. While repeating such scraping-up and falling, the process target "G" is fed to the output side by the feeding blade 4 and stored. The operating state of the storing unit 1 may be controlled manually or may be controlled automatically by an electronic control unit. In the latter case, the control may be based on a signal detected by a process-target detection sensor or based on the opening/closing status of the inputting port 6. Further, the rotational driven time

of the storing unit 1 may be controlled by a timer. The stored process target "G" is discharged from outputting port 8 to the outside of the storing unit 1 by rotating the storing unit 1 while the outputting port cover 11 is being
5 opened, and is delivered by a discharge chute, a discharge conveyor, or the like, which is not shown, and collected by a collection vehicle or the like.

[0028]

A shielding surface 31 that shields the space between
10 the upper inclined surface 24 and the lower inclined surface 25 closer to the front end surface 23 than the communicating port 21 may be disposed inside the baffle plate part 20. Since the baffle plate part 20 is reinforced to enhance the strength and the space inside the baffle plate part 20 is
15 limited by arranging the shielding surface 31, the process target "G" can be smoothly supplied from the communicating port 21 to the inside of the storing unit 1 without entering to a space on the tip end surface 23 further than the communicating port 21 and also without remaining in the
20 baffle plate part 20.

[0029]

[2. Actions and Effects]

FIGs. 4(A)-4(D) are diagrams for explaining the movement of the process target "G" in the storing unit 1,
25 and are front views (front views when viewed from the output

side to the input side) of the baffle plate part 20. The direction of rotation of the storing unit 1 is counterclockwise in FIGs. 4(A)-4(D).

[0030]

5 The process target "G" input into the storing unit 1 is scraped up by the feeding blade 4, and moves counterclockwise while being depressed against and compressed by the inner circumference surface 9 of the storing unit 1. The protrusion part 22 functions as a
10 stopper for preventing the scraped-up process target "G" from returning to the vicinity of the communicating port 21. With this structure, as shown in FIG. 4(B), a space "S" for scraping up and feeding the process target "G" is secured in the vicinity of the communicating port 21, so that another
15 process target "G" to be additionally input can be smoothly supplied.

[0031]

The protrusion part 22 has a shape having a distance to the inner circumference surface 9 of the storing unit 1 that
20 gradually narrows along the direction of rotation and then gradually widens. With this structure, the process target "G" is gradually compressed between the protrusion part 22 and the inner circumference surface 9, so that no extra load is applied to the driving device of the storing unit 1.
25 Further, as shown in FIG. 4(C), an appropriate space "S" is

also secured above the protrusion part 22. As a result, the process target "G" that has passed through the narrowest part moves above the protrusion part 22 without any resistance.

5 [0032]

In this way, no extra load caused by biting of a process target "G" is applied to the driving device of the storing unit 1 due to biting of the process target "G", and damaging or breaking the device due to overload can be
10 avoided. Further, by forming the protrusion part 22 on the lower portion of the side surface of the baffle plate part 20, it is possible to compress the process target "G" in an early stage. This can facilitate inputting of the process target "G" to reduce extra load on the device when the
15 process target "G" is scraped up. Then, the process target "G" scraped up by the feeding blade 4 moves to a portion above the baffle plate part 20 as shown in FIG. 4(D) and falls on the upper inclined surface 24 due to its own weight. The process target "G" is transported to the output
20 side deeper than the tip end surface 23 of the baffle plate part 20.

[0033]

The storing and outputting device 10 according to the embodiment brings the following effects.

25 (1) Even when the process targets "G" are input to

almost full, the process target "G" can be further fed to the output side. Accordingly, as compared with a conventional storing and outputting device having a conventional baffle plate part 20 not forming the protrusion part 22, for example, the storing and outputting device 10 of the present embodiment can improve the compression ratio to approximately twice so that the storage amount can be increased. The storing and outputting device 10 of the disclosure can efficiently and smoothly compress the process target "G" and increase the storage capacity. In addition, since the compression ratio increases, the size of the storing unit 1 can be reduced. Further, since a sufficient storage amount can be obtained even if the size is reduced, the costs for manufacturing and installing the device can be reduced, and the installation space can be effectively utilized.

[0034]

(2) In the above embodiment, the baffle plate part 20 is provided with the upper inclined surface 24 and the lower inclined surface 25. The upper inclined surface 24 makes it possible to feed process target "G" that fell from the inner circumference surface 9 to the output side. Further, the lower inclined surface 25 makes it possible to apply force to press the process target "G" against the inner circumference surface 9 like squeezing the juice by rotation

while securing the space "S" between the baffle plate part 20 and the feeding blade 4 where the process target "G" tends to be easily clogged up. Thus, even when the process target "G" is input to almost full, the process target "G" can be efficiently fed to the output side.

[0035]

(3) In the above-described embodiment, the tip end surface 23 of the baffle plate part 20 is formed so as to protrude to a position where the lower inclined surface 25 crosses the feeding blade 4 when viewed from the radius direction of the storing unit 1. This structure makes it possible to feed the process target "G" that falls on the upper inclined surface 24 deeply to the output side and thereby increase the storage capacity of the process target "G". Furthermore, as shown in FIG. 5, the space "S" secured under the lower inclined surface 25 can be increased.

[0036]

[3. Modification]

FIGs. 6(A)-6(E) is a diagram illustrating the structure of the storing and outputting device 10 according to modifications.

The above embodiment describes the protrusion part 22, which includes the protruding upper surface part 28 and the protruding lower surface part 29, but the specific shape of the protrusion part 22 is not limited to this.

Alternatively, the protrusion part 22 may be formed into a shape the outer circumference of which is curved when viewed from the output side, that is, a shape having an outer circumference free from an angle part. A protrusion part 5 22' shown in FIG. 6(A) is formed to have an outer circumference shape that is free from an angle part and that entirely draws a curve (e.g., an arc) gradually varying when seen from the output side. This structure can more smoothly transport the process target "G". In order to transport the 10 process target "G" further smoothly, as shown in FIG. 6(E), not only the protrusion part 22, but also the entire baffle plate part 20'', such as the tip end surface 23 the upper inclined surface 24, the lower inclined surface 25, the upper side surface 26, and the lower side surface 27, may be 15 formed so as to have a smooth curved surface.

[0037]

In the above embodiment, the baffle plate part 20 formed in a shape left-right asymmetrical (non-mirror symmetrical) with respect to the vertical plane passing 20 through the cylinder axis "C" is described, but alternatively may be formed into a left-right symmetrical shape (mirror symmetry) with respect to the vertical plane passing through the cylinder axis "C". In this alternative, by offsetting the plane of symmetry from the vertical plane 25 passing through the cylinder axis "C", the gap size on the

side face of the baffle plate part 20 can be reduced, so that a part of the baffle plate part 20 can function as the protrusion part 22.

[0038]

5 In the above-described embodiment, the entire shape of the baffle plate part 20 excluding the protrusion part 22 is substantially left-right symmetric (mirror symmetry), and attaching the protrusion part 22 causes the baffle plate part 20 to have a left-right asymmetrical (non-mirror
10 symmetrical) shape. Such a structure is advantageous, for example, when the protrusion part 22 is added to the existing baffle plate part 20 not having the protrusion part 22, and is also advantageous in terms of cost. Further alternatively, as shown in FIG. 6(B), the entire shape of
15 the baffle plate part 20' can be formed into left-right asymmetrical (non-mirror symmetrical) in advance.

[0039]

Furthermore, as shown in FIG. 6(C), the protruding lower surface part 29 of the baffle plate part 20" may be
20 omitted, and the communicating port 21 may be extended to the lower portion of the protrusion part 22. By expanding the communication port 21 in this way, it is possible to supply a lot of process targets "G" to the side (feeding side) for scraping up the process targets "G", so that the
25 process targets "G" can be rapidly scraped up to be fed to

the output side.

[0040]

In the above embodiment, the storing unit 1 having a single feeding blade 4 is exemplified, but multiple feeding
5 blades 4 may be applied. Alternatively, as shown in FIG. 6(D), a second feeding blade 4' different in phase from that of the feeding blade 4 may be provided. By providing the multiple feeding blades 4, 4' as described above, the process target "G" can be fed more efficiently. The second
10 feeding blade 4' may have an installation length shorter than that of the first feeding blade 4 and may be arranged no further than the tip end surface 23 of the baffle plate part 20. For example, if the second feeding blade 4' is arranged from the input side of the storing unit 1 to the
15 tip end surface 23 of the baffle plate part 20 as shown in FIG. 6(D), the process target "G" can be avoided from being excessively compressed on the output side. Incidentally, although the larger number of feeding blades 4, 4' enhances the ability to feed the process target "G", a smaller number
20 of feeding blades can maintain a sufficient feeding ability because the shape of the baffle plate part 20 of the above embodiment enhances the ability to feed the process target "G".

[Reference Signs List]

25 1 storing unit

	2	inputting unit (opening)
	3	outputting unit
	4	feeding blade
	5	input-side supporting part
5	6	inputting port
	7	inputting port door
	8	outputting port
	9	inner circumference surface
	10	storing and outputting device
10	11	outputting port cover
	12	opening and closing device
	13	bucket
	14	mount
	15	supporting roller
15	20	baffle plate part
	21	communicating port
	22	protrusion part
	23	tip end surface (tip end)
	24	upper inclined surface
20	25	lower inclined surface
	26	upper side surface
	27	lower side surface
	28	protruding upper surface part
	29	protruding lower surface part
25	30	protruding tip surface

	31	shielding surface
	32	thrust bearing part
	33	thrust supporting part
	C	cylinder axis (rotation center axis)
5	G	process target
	S	space
	V	vertical face

CLAIMS

[Claim 1]

A storing and outputting device comprising:

5 a storing unit that is formed to be rotatable around a rotation center axis extending in a substantial horizontal direction, is in a cylindrical shape having an inputting unit and an outputting unit, the inputting unit being provided with an opening in a first end side, and the outputting unit being provided with an outputting port that
10 is openable and closable and outputs a process target in a second end side, the storing unit having a feeding blade spirally arranged on an inner circumference surface from the first end side to the second end side;

an input-side supporting part that is provided with an
15 inputting port in which the process target is input, seals the storing unit at the inputting unit, and rotatably supports the storing unit; and

a baffle plate part that protrudes from a peripheral
portion of the inputting port toward the second end side,
20 wherein

the baffle plate part comprises

a communicating hole that is communicated to the
storing unit and supplies the process target to the storing
unit from the inputting port, and

25 a protrusion part that is formed on a side face of

the baffle plate part, the side face being on a side along which the process target is scraped up by rotation of the storing unit in a direction of rotation that transports the process target from the first end side to the second end side and being one of left and right sides defined by a vertical face passing through the rotation center axis, the protrusion part protruding so as to have a distance to the side face on the inner circumference surface of the storing unit gradually narrowing and then gradually widening along the direction of rotation.

[Claim 2]

The storing and outputting device according to claim 1, wherein the protrusion part is formed to have an outer circumference shape that is free from an angle part and that entirely draws a curve gradually varying when seen from the second end side.

[Claim 3]

The storing and outputting device according to claim 1, wherein the baffle plate part comprises an upper inclined surface that inclines upward from a tip on the second end side to the first end side and a lower inclined surface that inclines downward from the tip on the second end side to the first end side.

[Claim 4]

The storing and outputting device according to claim 3,
wherein the tip of the baffle plate part is formed to
protrude to a position where the lower inclined surface
5 crosses the feeding blade when seen from a radius direction
of the storing unit.

[Claim 5]

The storing and outputting device according to any one
10 of claims 1-3, wherein the communicating port extends to a
lower portion of the protrusion part and opens at the lower
part.