

Handling device for storing and retrieving bottle-type individual items

The present invention relates to an operating device for
5 placing or retrieving bottle-like piece goods onto or from
storage places of a picking device. In particular, the bottle-
like piece goods are medicament bottles and similarly shaped
medicament packs.

In picking devices known from the prior art, a large number
10 of different and differently dimensioned medicament packs are
stored chaotically and in a space-optimized manner on elongated
flat shelves or are situated on inclined storage shafts. The
stored medicament packs are retrieved with the aid of an
operating device, for the purpose of which the medicament packs
15 situated on a shelf are moved onto a tray using clamping jaws of
the operating device. The gripping jaws of the operating device,
in particular, are designed to retrieve and place medicament
packs having a square base.

The "usual" medicament packs to be stored in a picking
20 device differentiate themselves with regard to their dimensions;
however, they usually have a plane base and are orthogonally
aligned to the base, have parallel side surfaces and end faces,
which again are orthogonally aligned with regard to these side
surfaces, so that the medicament packs can be pulled, usually
25 using pivotable clamping jaws, from a storage place onto the
tray of the operating device.

Using the known operating devices in known picking devices,
bottle-like shaped piece goods or medicament packs can only be
stored in a standing manner on their usually circular bottom
30 area. Such storing is however not space optimized because the
heights of the bottle-like medicament packs greatly differ.
Also, starting at a certain weight, it is difficult to pull the
medicament packs from a storage place onto the tray using the
usually used clamping jaws without the risk of the bottle-like
35 medicament packs tipping over during this movement (and making a
further retrieval impossible) or of the clamping jaws bending

open during the pulling motion and, for this reason, making the pulling from the storage place impossible. Alternatively, it is possible to store the bottle-like medicament packs in brackets, these brackets being formed like usual medicament packs and
5 correspondingly can be placed or retrieved using known operating devices. This however requires that the medicament bottles before storing are moved into respective brackets and after retrieval are removed from these brackets, which makes the overall handling time consuming. Moreover, different brackets
10 have to be provided for the differently dimensioned bottle-like medicament packs, further complicating the storing of bottle-like medicament packs using the known operating devices.

It is the object of the present invention to provide an operating device which can place and retrieve bottle-like piece
15 goods, in particular medicament packs, which are horizontal, without using specifically adapted brackets.

This object according to the present invention is achieved by an operating device for placing or retrieving bottle-like piece goods onto or from storage places of a picking device
20 according to Claim 1. Furthermore, the object is achieved by an alternative operating device according to patent Claim 6.

The first alternative of the operating device according to the present invention includes a gripping jaw assembly having two profile-rod shaped gripping jaws, which include opposite
25 lying inner surfaces, extending in a first horizontal direction, the first horizontal direction corresponding to the direction of placing and retrieving piece goods. According to the present invention, the gripping jaws are configured in such a manner that the distance of the inner surfaces from each other at least
30 in sections tapers in the downward direction so that the inner surfaces are configured in such a manner that the bottle-like piece goods can be lifted from below. Furthermore, the operating device includes a first actuation unit coupled with the gripping jaw assembly for moving the gripping jaw assembly in the first
35 horizontal direction, so that the lifted piece goods can be removed from or added to a storage place.

The operating device according to the present invention therefore operates according to a different gripping principle than the known operating devices for cuboidal medicament packs.

The bottle-like piece good, for example, a bottle-like medicament pack, is not clamped or pulled but gripped from below by the gripping jaws and lifted. For this purpose, the alignment of the clamping jaw according to the present invention is
5 necessary to ensure a stable position of the bottle-like piece goods on the gripping jaws. The inner surfaces of the profile-rod shaped gripping jaws at least in sections are configured in such a manner that a secure transport of the bottle-like piece goods in the "trough", which is defined by the inner surfaces of
10 the rod-shaped gripping jaws, is ensured.

In a preferred embodiment of the operating device according to the present invention it is provided that the gripping jaws are configured as a round profiles, so that the inner surfaces are configured in a convex manner to each other. The
15 specification according to the present invention that the distance of the inner surfaces from each other at least in sections tapers in the downward direction, thus, in this embodiment is ensured in that the inner surfaces are configured in a round manner. A further advantage of the profile-rod shaped
20 gripping jaws configured as a round profile is that they feature, in comparison to the "usual" clamping jaws, an increased stability, as a result of which a respective operating device is capable to also place and again retrieve bottle-like piece goods or medicament packs having an increased weight.

25 In an alternative embodiment of the operating device, it is provided that the gripping jaws are configured as a flat profile having flat inner surfaces. Since it is necessary that the distance of the inner surfaces from each other at least in sections tapers in the downward direction, the flat profiles are
30 positioned to each other in a V-shaped manner.

Bottle-like piece goods can be easily placed and retrieved using gripping jaws configured as a flat profile having flat inner surfaces, which are positioned in a permanent V-shaped manner; however, it is not possible or only possible with great
35 difficulty to place and retrieve "normal" medicament packs, that is, such medicament packs having a rectangular base. In a preferred embodiment, it is therefore provided that the gripping jaws are rotatably mounted so that the gripping jaws with the aid of a second actuation unit are rotatable from a position

gripping from below, in which the distance of the inner surfaces at least in sections tapers in the downward direction, into a clamping position, in which the inner surfaces of the gripping jaws, for example, are oriented parallel to each another. A
5 correspondingly configured operating device makes it possible to place and retrieve the bottle-like medicament packs and also medicament packs having a rectangular base.

On account of the configuration of the gripping jaws according to the present invention, that is, on account of that
10 the distance of the inner surfaces at least in sections tapers in the downward direction, it is possible to place and retrieve bottle-like medicament packs having very different diameters. However, for gripping jaws which have a predetermined distance to each other it is, even for the alignment of the inner
15 surfaces according to the present invention, only possible to place and retrieve bottle-like medicament packs having a certain diameter or radius. If the diameter of the bottle-like medicament packs is too big, these medicament packs can no longer securely be stored in the trough formed by the inner
20 surfaces having the distance tapering in the downward direction. If the diameter is too small, reaching from below is simply no longer possible because the gripping jaws are guided past the bottle-like medicament packs.

In a preferred embodiment it is therefore provided that the
25 operating device has a third actuation unit coupled to the gripping jaws, with which the gripping jaws are movable toward and away from each other along a second horizontal direction transverse to the first horizontal direction. For a correspondingly configured operating device, the gripping jaws
30 can be adapted to the diameter of bottle-like configured medicament packs or piece goods. Even in the case in which the gripping jaws are rotatably mounted, thus, the operating device is suitable for placing and retrieving bottle-like medicament packs and "normal" medicament packs, a corresponding
35 configuration is advantageous, since it enables to clamp-grip "normal" medicament packs having very different dimensions.

The previously described embodiments of the operating device achieves the object of the present invention in that the gripping jaws of the operating device are specifically designed

so that a gripping from below and lifting of the bottle-like medicament packs is enabled. In order to achieve the previously mentioned object, a variation exists in which the bottle-like medicament packs are not lifted but pulled from the storage place. The known operating devices are also used to "pull" "normal" medicament packs having rectangular bases from a storage place in the picking device; however, for this purpose, the medicament packs are clamp-gripped by pivoting the clamping jaws. On account of the plane circular bases of the bottle-like medicament packs, clamp-gripping is however to be dismissed - the clamping force would simply not suffice to pull medicament packs formed in such a manner, for example, from the storage location in the picking device. According to the present invention, the alternative operating device includes a tray extending in a first horizontal direction X, which has a placing and a retrieving side. Such a tray is necessary for the alternative operating device, as the bottle-like piece goods or medicament packs are not to be lifted but pulled. Furthermore, the operating device according to the present invention includes a gripping jaw assembly having two gripping jaws movable toward and away from each other along a second horizontal direction Y transverse to first horizontal direction X, the gripping jaws for carrying out the movement in the second horizontal direction being coupled to a third actuation unit, at least one of the gripping jaws being assigned to a pivot device which, at the end of a gripping jaw facing away from the gripping jaw assembly (thus, the terminal end) has a catching section, which for catching a piece good situated between the gripping jaws is pivotable into the area between the gripping jaws. The operating device further includes a sliding device for sliding a piece good from the tray, and an actuation unit coupled to the gripping jaw assembly for moving the gripping jaw assembly in the first horizontal direction. Different from the first alternative, in which the bottle-like medicament packs on account of the configuration of the gripping jaws according to the present invention are grippable from below, the bottle-like medicament packs are grippable from behind and pullable from a storage place by the operating device of the second alternative approach, since at least one pivot device is assigned to one of

the gripping jaws, which can grip a bottle-like piece good to be retrieved from behind.

In the previously mentioned embodiments, it is not necessarily provided that the clamping jaws themselves are able to be pivoted, thus, that they can be moved in such a manner that the two terminal ends of the gripping jaws can be moved toward or away from each other, but that the ends of the gripping jaws assigned to the gripping jaw assembly are kept stationary. This can be advantageous, in particular, if bottle-like medicament packs and also "normal" medicament packs are to be stored, so that it is provided in a preferred embodiment that the gripping jaw assembly has a fourth actuation unit and at least one of the gripping jaws is pivotably mounted at the gripping jaw assembly and is pivotable via the fourth actuation unit.

In particular when clamp-gripping and gripping (bottle-like) medicament packs from below, it can occur owing to the weight of the medicament packs that the gripping jaws bend, the exact type of bending depending on the action of force onto the gripping jaws. In an operating device having gripping jaws configured as a flat profile, it is therefore preferred that the gripping jaws at least in sections have a web extending in the longitudinal direction, which prevents the gripping jaws from bending.

Subsequently, preferred embodiments of the operating device according to the present invention are described with reference to the drawing, in which

Figures 1A and 1B show slanted views of a first embodiment of the operating device according to the present invention;

Figure 2A and 2B show detailed views of the first embodiment;

Figure 3 shows a further detailed view of the first embodiment having rotated gripping jaws;

Figure 4 shows a frontal view of the gripping jaws having a moving mechanism;

Figure 5 shows a slanted view of a second embodiment;

Figure 6 shows a detailed view of the second embodiment;

Figures 7A and 7B show detailed views of a third embodiment according to the alternative;

Figure 8 shows a partial top view of the third embodiment;

Figures 9A and 9B show detailed views of the third embodiment; and

Figures 10A through 10D show detailed views of the third embodiment.

5 Figures 1A and 1B show two slanted views of a first embodiment of the operating device according to the present invention, in this embodiment the gripping jaws being rotatably mounted, so that the gripping jaws with the aid of a second actuation unit, formed by actuators 110a, 110b, are rotatable
10 from a gripping position from below shown in Figure 1A, in which the distance of inner surfaces 12a and 12b (not shown) from opposite lying gripping jaws 11a, 11b tapers in the downward direction, into a clamping position shown in Figure 1B, in which the inner surfaces 12a, 12b of gripping jaws 11a, 11b are
15 aligned parallel to each other. Gripping jaws 11a, 11b are part of gripping jaw assembly 100 having a central frame structure 101, to which two actuators 110a, 110b of the second actuation unit are fastened. Gripping jaw assembly 100 and the positioning of actuators 110a, 110b at this gripping jaw assembly is
20 described in greater detail in reference of the subsequent figures.

The operating device shown in Figures 1A and 1B furthermore includes a first actuation unit 20, which is part of a linear drive system, by which gripping jaw assembly 100 is movable
25 along a first horizontal direction X, for the purpose of which the linear drive system includes a threaded spindle 21, through the rotational movement of which the gripping jaw assembly can be moved along the first horizontal direction. Between the two parallel gripping jaws 11a, 11b, a slider 10 is shown, which can
30 be moved via a (not shown) actuation mechanism along the first horizontal direction, in particular, the slider can be used to slide "normal" medicament packs having a plane rectangular base from a tray 2 of the operating device onto, for example, a storage place.

35 The embodiment shown in Figures 1A and 1B is, owing to its special design, suitable to place and retrieve bottle-like medicament packs and also "normal" medicament packs. As already indicated above, the gripping jaws are rotatably mounted, that is, they can be rotated from the position gripping from below

for bottle-like medicament packs shown in Figure 1A into the position shown in Figure 1B, in which inner surfaces 12a, 12b of gripping jaws 11a, 11b are configured parallel to each other. In order to support the clamping effect of the gripping jaws for placing and retrieving medicament packs, gripping jaws at their ends facing away from the gripping jaw assembly can have sections 15a and 15b (not shown) having an increased friction. In the shown embodiment, the gripping jaw assembly furthermore includes a sensor means 3, by which for example the alignment of tray 2 at a storage surface can be determined. Furthermore, the operating device according to the first embodiment includes a third actuation unit 140, the function of which is explained in greater detail in the subsequent figures.

In Figure 1B, a web 25b can be seen for gripping jaw 11b, which extends in direction X on the outer surface of the gripping jaw and improves rigidity of the gripping jaw, so that the gripping jaw does not bend outwards when, for example, lifting a medicament pack. A corresponding (but not visible) web 25a is formed at the outer surface of gripping jaw 11a.

Figures 2A and 2B show detailed views of the operating device in the region of gripping jaw assembly 100, various components being omitted in Figures 2A and 2B for illustrating components otherwise concealed (actuator 110b in Figure 2A and actuators 110a, 110b in Figure 2B, as well as central frame structure 101). As can be seen from Figures 2A and 2B, actuators 110a, 110b of the second actuation unit are coupled via a (in particular illustrated in detail in Figure 4) transmission having a rotation means 111a, 111b, the rotary axis of which extends in first horizontal direction X. In turn, the rotary means are coupled via a web to gripping jaw holders 112a, 112b, to which gripping jaws 11a, 11b are attached. With the aid of actuators 110a, 110b, the rotary means can be moved in such a manner that the gripping jaws can be moved from the position shown in Figures 2A and 2B into the position gripping from below shown in Figure 3.

In the first embodiment, the gripping jaws are moreover movable toward and away from each other along a second horizontal direction Y transverse to first horizontal direction X. For this purpose, the gripping jaws and the actuators

assigned to them, the rotary means and the gripping jaw holders (110a-112a, 110b-112b) are attached to respectively one gripping jaw slide 122a, 122b (see Figure 2B). This gripping jaw slide can be moved along a gripping jaw guide 121a, 121b in second horizontal direction Y. For this purpose, the gripping jaws (including the components assigned to them) in the shown embodiment are attached via the actuators to gripping jaw actuation rods 120a, 120b, which are configured as two toothed bars guided in parallel, having opposite profiles. Viewed from a vertical perspective, a gear wheel 141 coupled to the third actuation unit is situated between gripping jaw actuation rods 120a, 120b. If this gear wheel is rotated with the aid of the third actuation unit, the rotary movement of gear wheel 141 is transferred to the actuators coupled to gripping jaw actuation rods 120a, 120b, as a result of which the gripping jaws can be moved toward and away from each other along second horizontal direction Y transverse to first horizontal direction X.

Figure 3 now shows once again a detailed view of the position gripping from below, that is, of the position in which the gripping jaws of the operating device are moved in such a manner that at least in sections the distance of the inner surfaces from each other is tapered in the downward direction, so that the inner surfaces are configured in such a manner that the bottle-like piece goods can be lifted from below.

With the aid of a frontal view of the gripping jaws including the associated actuation assemblies, Figure 4 illustrates how bottle-like piece goods or medicament packs can be gripped by the gripping jaws according to the present invention. As a function of the exact embodiment of the operating device, namely whether the gripping jaws can be moved in second horizontal direction Y transverse to first horizontal direction X, bottle-like piece good 5 can be approached from below or from the side with the aid of the gripping jaws and can be retrieved from a storage place by a vertical movement of the operating device. It can be concluded from Figure 4 that gripping jaws 11a, 11b are attached to gripping jaw holders 112a, 112b, which, in turn, are attached via webs 113a, 113b to rotary means 111a, 111b, which are coupled via a transmission 114a, 114b to actuators 110a, 110b. The operating device

according to the present invention makes it possible to place and retrieve bottle-like piece goods along their longitudinal direction. In this instance, it is required that the picking device is correspondingly adapted so that the bottle-like piece goods are securely stored in their storage places. For this purpose, it is for example conceivable that the storage places feature holders that are specifically adapted to the bottle-like piece goods. In the most simple case, it can for example be provided that a storage place 70 has two parallel resting means 71, 72, which enable to store the bottle-like piece goods in the longitudinal direction. The exact type of storing the bottle-like piece goods in the longitudinal direction in the picking device, however, is not part of this invention and, for this reason, shall only be briefly hinted at in a rudimentary manner.

Figure 5 shows a slanted view of a second embodiment of the operating device according to the present invention. In this embodiment, two gripping jaws 13a, 13b are configured as round profiles, which entails that inner surfaces 14a and 14b (not shown) of the clamping jaws are configured in a convex manner to each other. This type of configuration, according to the present invention, also fulfills the requirement that at least in sections the distance of the inner surfaces from each other is tapered in the downward direction so that the inner surfaces are configured in such a manner that the bottle-like piece goods can be lifted from below. The second embodiment also includes a gripping jaw assembly 100 having a central frame structure 101. In this embodiment, the gripping jaw assembly furthermore includes an upper gripping jaw guide 150, which subsequently is described in greater detail in reference to Figure 6.

Upper gripping jaw guide 150 includes two elongated holes 151a, 151b configured in second horizontal direction Y, into each of which one nose 161a, 161b of a gripping jaw holder 160a, 160b engages. Gripping jaws 13a, 13b configured as round profiles are attached to gripping jaw holders 160a, 160b configured as L-shapes. As it is indicated in Figure 6, L-shaped gripping jaw holders 160a, 160b are fastened to gripping jaw slides via vertically running pivot axes, of which in Figure 6 only pivot axis 162b can be seen. By moving upper gripping jaw guide 150 in first horizontal direction X, a pivoting of

gripping jaws 13a, 13b can be achieved on the basis of the pivotable mounting of gripping jaw holders 160a, 160b at the gripping slides (not precisely visibly in Figure 6). By situating noses 161a, 161b in elongated holes 151a, 151b of upper gripping jaw guide 150 and holding the gripping jaw guides at the vertical pivot axes, these pivot axes are pivoted inwards at the terminal ends when moving the upper gripping jaw guide in the direction of loading sill 2a of tray 2. The movement of upper gripping jaw-guide 150 in first horizontal direction X is caused by fourth actuation unit 210, as it is described in greater detail in reference to the subsequent figures.

Figures 7A and 7B show slanted views of a third embodiment of the operating device according to the present invention, the third embodiment being configured according to the variation. In reference to the third embodiment, first the pivotability of the gripping jaws, which is also provided in this embodiment, is described. The previously described pivotability of the gripping jaws in the second embodiment functions correspondingly.

As it can be concluded from Figure 7A, behind or below sensor 3 a fourth actuation unit 210 is provided. As it can be concluded from Figure 7B, fourth actuation unit 210 is coupled via a coupling piece 211 to slide 271, which with the aid of the actuation unit can be moved on a guide 270 in first horizontal direction X. Slide 271, which, as can be concluded from Figure 7A, carries sensor 3, is connected via coupling elements 272 to an upper gripping jaw guide 250. Via coupling elements 272, the movement of slide 271 in the first horizontal direction is transferred to upper gripping jaw guide 250, which moves accordingly.

Figure 8 shows a top view onto gripping jaw assembly 200 and it being coupled to fourth actuation unit 210. As can be concluded from Figure 8, noses 261a, 261b extend from L-shaped gripping jaw holders 260a, 260b in elongated holes 251a, 251b, which are formed in upper gripping jaw guide 250. If now the upper gripping jaw guide is moved forward by fourth actuation unit 210 (in Figure 8 moved downward), the L-shaped gripping jaw holders, which are fixed via (in Figure 8 not visible) vertical pivot axes 262a, 262b (see Figures 9A and 9B) at gripping jaw slides 222a, 222b, are pivoted by catching the noses of the

gripping jaw holders, so that the ends of the gripping jaws remote from the gripping jaw assembly (thus, the terminal ends) are pivoted towards each other.

Figures 9A and 9b show detailed views of the gripping jaw assembly and it being coupled to fourth actuation unit 210. Via a coupling 211, fourth actuation unit 210 is coupled with slide 271 movable in first horizontal direction X, which is movable on guide 270. Via coupling elements 272, which is only indicated in Figure 8, the movement in first horizontal direction X is transferred to the upper gripping jaw holder. As can be concluded from Figures 9A and 9B, the gripping jaws of the third embodiment are not only pivotable, but they can also be moved along second horizontal direction Y. For this purpose, gripping jaw slides 222a, 222b are attached to gripping jaw actuation rods 220a, 220b, which can be moved via a gear wheel 141 of third actuation unit 140 along second horizontal direction Y. The movement of gripping jaw slides 222a, 222b is transferred to L-shaped gripping jaw holders 260a, 260b. As can be concluded from Figures 9A and 9B, these gripping jaw holders are coupled via vertical axes 262a, 262b to the gripping jaw slides. In turn, gripping jaws 50a, 50b are attached to the gripping jaw holders. The special type of coupling the gripping jaws within the gripping jaw assembly enables that the gripping jaws along second horizontal direction Y are movable as well as also pivotable.

In reference to Figures 10A-10D, showing detailed views of the ends of the gripping jaws facing away from the gripping jaw assembly, pivot devices assigned to the gripping jaws are described, these pivot devices already being shown in Figures 7A and 7B; however, they have not been discussed within the context of these figures. As can be concluded from Figure 10A, respectively one pivot device is assigned to pivot jaws 50a, 50b configured as a flat profile, which in the shown embodiment includes a guide means 61a, 61b extending in first horizontal direction X. A pivot element 62a, 62b is guided through this guide means, each of the pivot elements having at its terminal end a catching section angled by approximately 90° in regard to the longitudinal direction, which in Figure 10A is vertically aligned at the ends of the gripping jaws. The pivot elements are

rotatable via (not shown) actuators, the catching section via this rotary movement, as it is shown in Figure 10B, can be rotated into the region between inner surfaces 51a, 51b of the clamping jaws. In order to pull a bottle-like medicament pack resting on a storage place from this storage place using the gripping jaws according to the third embodiment, the catching sections, as soon as the gripping jaws have been moved into the correct position in reference to the first horizontal direction, are pivoted into the region between the gripping jaws and, in so doing, when the gripping jaws are accordingly aligned, are gripping the usually circularly configured base of the medicament packs from behind. As soon as a corresponding gripping from behind is configured, the bottle-like medicament packs can be pulled from the storage location, the parallel gripping jaws serving as guides.

In the variation of the third embodiment shown in Figure 10A, guide means 61a, 61b, through which pivot elements 62a, 62b extend, are situated below the actual gripping jaws. For alternative variations, it is of course possible that guides 61a, 61b are situated above actual gripping jaws 50a, 50b, as this is indicated in Figure 10C. Alternatively, pivot means 62a, 62b can also be guided through the gripping jaws, the recesses in the gripping jaws forming the guide means.

The pivot device illustrated in reference to the third embodiment, for example, can also be combined with the rod-shaped gripping jaws according to the second embodiment, in this case it possibly lending itself to guiding the pivot elements through the gripping jaws formed as a round profile.

Claims

1. An operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking
5 device, comprising:

a gripping jaw assembly (100; 200) having
two profile-rod shaped gripping jaws (11a, 11b; 13a, 13b;
50a, 50b), having opposite lying inner surfaces (12a, 12b; 14a,
14b; 51a, 51b), extending in a first horizontal direction,
10 wherein the first horizontal direction (X) corresponds to the
direction for placing and retrieving piece goods,
wherein the gripping jaws (11a, 11b; 13a, 13b; 50a, 50b) are
configured in such a manner that the distance of the inner
surfaces (12a, 12b; 14a, 14b; 51a, 51b) at least in sections
15 tapers in the downward direction, so that the inner surfaces
(12a, 12b; 14a, 14b; 51a, 51b) are configured in such a manner
that the bottle-like piece goods can be lifted from below, and
a first actuation unit (20, 21) coupled to the gripping jaw
assembly (100; 200) for moving the gripping jaw assembly (100;
20 200) in the first horizontal direction (X).

2. The operating device (1) for placing or retrieving
bottle-like piece goods onto or from storage places of a picking
device as recited in Claim 1,
25 characterized in that the gripping jaws (13a, 13b) are
configured as a round profile so that the inner surfaces (14a,
14b) are formed in a convex manner to each other.

3. The operating device (1) for placing or retrieving
30 bottle-like piece goods onto or from storage places of a picking
device as recited in Claim 1,
characterized in that the gripping jaws (11a, 11b; 50a, 50b)
are configured as flat profiles having plane inner surfaces
(12a, 12b; 51a, 51b).

35

4. The operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking device as recited in Claim 3,

characterized in that the gripping jaws (11a, 11b) are
5 rotatably mounted so that the gripping jaws (11a, 11b) with the aid of a second actuation unit (110a, 110b) are rotatable from a position gripping from below, in which the distance of the inner surfaces (12a, 12b) at least in sections tapers in the downward direction, into a clamping position, in which the inner surfaces
10 (12a, 12b) of the gripping jaws (11a, 11b) are aligned parallel to each another.

5. The operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking
15 device as recited in Claim 3 or 4,

characterized in that the operating device has a third actuation unit (140) coupled to the gripping jaws (11a, 11b; 13a, 13b; 50a, 50b), by which the gripping jaws (11a, 11b; 13a, 13b; 50a, 50b) are movable toward and away from each other along
20 a second horizontal direction (Y) transverse to the first horizontal direction (X).

6. The operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking
25 device, comprising:

a tray (2) extending in the first horizontal direction (X), having a placing and a retrieving side (2a),

a gripping jaw assembly (200) having
two gripping jaws (50a, 50b) movable toward and away from
30 each other along a second horizontal direction (Y) transverse to the first horizontal direction (X), wherein the gripping jaws for carrying out the movement in the second horizontal direction (Y) are coupled to a third actuation unit (140),

wherein a pivot device (61a, 61b, 62a, 62b) is assigned to
35 at least one gripping jaw (50a, 50b), which at the end of the gripping jaw has a catching section, which is, for catching a piece good situated between the gripping jaws (50a, 50b), at least in sections pivotable in a region between the gripping jaws,

a sliding device (10) for sliding a piece good from the tray (2), and

an actuation unit (20, 21) coupled to the gripping jaw assembly (200) for moving the gripping jaw assembly in the first horizontal direction (X).

7. The operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking device as recited in one of Claims 3 through 6,

10 characterized in that the gripping jaw assembly (100, 200) has a fourth actuation unit (210, 211), and at least one of the gripping jaws (11a, 11b; 50a, 50b) is pivot-mounted at the gripping jaw assembly (100, 200) and is pivotable via the fourth actuation unit (210, 211).

15

8. The operating device (1) for placing or retrieving bottle-like piece goods onto or from storage places of a picking device as recited in one of Claims 3 through 7,

characterized in that the gripping jaws (11a, 11b) at least
20 in sections have a web (25a, 25b) extending in the longitudinal direction.