Claims

1. An apparatus (1) for identifying, measuring and positioning piece goods (2), comprising

an optically transparent turntable (10) having a support surface (11) for piece goods extending in an X and Y direction of the apparatus, wherein the turntable (10) cooperates with a rotary drive (12) coupled to a control device (20) and is rotatable about an axis of rotation extending in the Z direction, wherein the Z direction extends orthogonally to the X and Y directions, and wherein the X direction corresponds to the longitudinal axis and the Y direction corresponds to the transverse axis of the apparatus,

a first conveying device (30) for arranging a piece good on the support surface (11) of the turntable (10),

a first optical reading device (61) arranged in the Z direction below the turntable (10) and coupled to the control device (20) for detecting the dimensions of a piece good resting on the support surface (11) and an identifier on one side surface of a resting piece good, which side surface faces the support surface (11),

a second optical reading device (62) coupled to the control device (20) for detecting the height of a piece good resting on the support surface (11) and an identifier on a side surface of a resting piece good which side surface is orthogonal to the support surface,

a storage area (51) arranged downstream of the turntable (10) for a plurality of piece goods, wherein the arrangement of the turntable and of the storage area defines the longitudinal axis,

a second conveying device (40) coupled to the control device (20) having a gripping means (45) for piece goods, wherein the gripping means (45) is movable, at least in the X

and Y directions, over the storage area (51), so that piece goods can be arranged side by side in the storage area in the X and/or Y directions,

characterized in that the first conveying device (30) comprises a gripping means (35) which is movable in the X, Y and Z directions.

2. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to claim 1, characterized in that the apparatus comprises a third optical reading device (63) arranged in the Z direction above the turntable and coupled to the control device (20) for detecting the dimensions of the piece good resting on the support surface (11) and/or an identifier on one side surface facing away from the support surface (11).

3. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to claim 1 or 2, characterized in that the apparatus comprises an optical coarse detection device (64) coupled to the control device for determining the spatial orientation of a piece good.

4. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to any of claims 1–3, characterized in that a discarding device (13) is arranged between the turntable (10) and the storage surface (51) for the removal of piece goods.

5. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to any of claims 1–4, characterized in that the first and/or the second conveying device (30, 40) are designed as suction grippers which are movable in the X, Y and Z directions.

6. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to claim 5, characterized in that a suction gripper has two differently dimensioned suction heads (35a, 35b).

7. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to any of claims 1–6, characterized in that the second conveying device (40) is designed as a clamping gripper which is movable at least in the X and Y directions.

8. The apparatus (1) for identifying, measuring and positioning piece goods (2) according to any of claims 1–7, characterized in that the apparatus (1) has a supply device (70) and a position detection device (65) arranged above the supply device in the Z direction.

9. A method for identifying, measuring and positioning piece goods (2), wherein

a) a single piece good is arranged by a first conveying device (30) on a first side surface on a support surface (11) of an optically transparent turntable (10) which support surface extends in the X and Y direction, wherein the first conveying device (30) comprises a gripping means (35) which is movable in the X, Y and Z directions, wherein the turntable (10) cooperates with a rotary drive (12) which is coupled to a control device (20), and which turntable is rotatable about an axis of rotation extending in the Z direction, wherein the Z direction extends orthogonally to the X and Y directions and wherein the X direction corresponds to the longitudinal axis and the Y direction corresponds to the transverse axis of the apparatus,

b) the first side surface is scanned and the X, Y dimensions of the piece good resting on the support surface (11) are detected with a first optical reading device (61) which is arranged below the turntable (10) in the Z direction, and it is determined whether an identifier was detected during the scanning of the first side surface,

c) a second side surface facing the second reading device, which second side surface is designed orthogonally to the first side surface, is scanned and the Z dimension of the piece good resting on the support surface is detected with a second optical reading device (62), and if no identifier was detected on the first side surface, it is determined whether an identifier was detected during the scanning of the second side surface, wherein steps b) and c) can be carried out simultaneously or staggered,

d) in the event that no identifier was detected, the turntable is rotated so that a next side surface, which is perpendicular to the first side surface, faces the second optical reading device, wherein the next side surface is scanned with the second reading device, and it is determined whether an identifier was detected during the scanning of the next side surface,

e) step d) is repeated until three next side surfaces were scanned, or an identifier was detected,

f) if no identifier was detected, the piece good is removed from the turntable and sent for further use,

g) as soon as an identifier and all dimensions of the resting piece good are detected, a storage location is determined in a storage area (51), which is arranged downstream of the turntable, by a control device on the basis of the dimensions and/or of the identifier,

h) the piece good is gripped with a gripping means (45) of a second conveying device (40) after determining the storage

location and moved to the storage location, whereby the gripping means (45) is moved in the X and/or Y and Z directions.

10. The method for identifying, measuring and positioning piece goods (2) according to claim 9, characterized in that in step b) a side surface is scanned by a third optical reading device (63), which is arranged above the turntable (10) in the Z direction, said side surface facing this reading device (63), and if necessary, the X, Y dimensions of the piece good resting on the support surface (11) are detected and it is determined whether an identifier was detected during the scanning of the side surface.

11. The method for identifying, measuring and positioning piece goods (2) according to claim 9 or 10, characterized in that in method step a) the spatial orientation of the piece good held by the first conveying device (30) is determined before arranging the piece good on the support surface (11) of the turntable (10) by means of a coarse detection device (64).

12. The method for identifying, measuring and positioning piece goods (2) according to claim 11, characterized in that the coarse detection device (64) is designed as an optical reading device and, when determining the spatial orientation, the piece good is scanned in order to detect an identifier.

13. The method for identifying, measuring and positioning piece goods (2) according to claims 11 or 12, characterized in that the piece good is moved by means of a conveying device (30, 40) such that the piece good rests on a largest side surface on the support surface if it is detected during the determination of the spatial orientation that not a largest

side surface of the piece good held by the first conveying device (30) is facing the support surface.