Claims

1. A clamping arrangement with a clamping device (1) able to be fastened on a clamping base (50) and with a clamping element (26) able to be tightened thereon, **characterized in that** the clamping device (1) has a clamping module (2) provided with clamping members (15), which is able to be fixed on the clamping base (50) by means of a fixing element (3), wherein the fixing element (3) is configured such that the clamping module (2), when the fixing element (3) is in the fixed state, is thus able to be fixed in the X-Y plane, formed by the upper side of the clamping base (50) in a floating, displaceable manner on the clamping base (50).

2. The clamping arrangement according to Claim 1, **characterized in that** the clamping module (2) in the fixed state of the fixing element (3) is displaceable with respect to the fixing element (3) in the X-Y plane, whereas it is received in the fixing element (3) in Z-direction by means of a clearance fit, and that the fixing element (3) is provided with Z-support surfaces (24) for the clamping element (26).

3. The clamping arrangement according to Claim 1 or 2, **characterized in that** the fixing element (2) has centring grooves (23) or centring cams and the clamping element (26) has centring cams (28) or respectively centring grooves, configured in a corresponding manner thereto, for centring the clamping element (26) with respect to the fixing element (3) in the X-Y plane in one direction.

4. The clamping arrangement according to one of the preceding claims, **characterized in that** the clamping module (2) is configured substantially cylindrically and the fixing element (3) is configured substantially in an annular manner, wherein the clamping module (2) is received in the X-Y plane with radial play in a floating manner in the fixing element (3).

5. The clamping arrangement according to Claim 4, **characterized in that** the clamping module (2) is provided on the outer side with a circumferential shoulder (16) and the fixing element (3) is provided on the inner side with a recess (21) configured in a corresponding manner thereto, wherein the outer diameter of the shoulder (16) is smaller by at least 0.2mm, in particular by at least 0.5mm, than the diameter of the recess (21).

6. The clamping arrangement according to Claim 5, **characterized in that** the clamping module (2) is received in Z-direction by means of a clearance fit in the fixing element (3), in particular by the height of the shoulder (16) being adapted to the height of the recess (21) such that in Z-direction a clearance fit is formed between the shoulder (16) and the recess (21).

7. The clamping arrangement according to one of Claims 3 to 5, **characterized in that** the clamping module (2) is provided with a plurality of clamping members (15) arranged distributed over the circumference, and the clamping element (26) is provided on the inner side with an annularly circumferential clamping surface (27), on which the clamping members (15) abut for tightening.

8. The clamping arrangement according to one of the preceding claims, **characterized in that** the clamping module (2) has a spring-loaded actuating piston (4), which is arranged for actuation of the clamping members (15) axially movably in the interior of the clamping module (2).

9. The clamping arrangement according to Claim 8, **characterized in that** the actuating piston (4) is displaceable pneumatically or hydraulically from an active position, in which it is under the action of springs (14) and if applicable is additionally loaded hydraulically or pneumatically, and in which it presses the clamping members (15) radially towards the exterior, into a starting position in which the clamping members (15) are relieved and are able to be displaced radially inwards, wherein the actuating piston (4) is held in the active position in particular by means of self-locking.

10. The clamping arrangement according to Claim 8 or 9, **characterized in that** the actuating piston (4) is able to be brought into operative connection with an ejection element (19), able to be displaced in Z-direction, which is movable beyond the upper side of the clamping module (2) by means of the actuating piston (4).

11. The clamping arrangement according to one of Claims 8 to 10, **characterized in that** the actuating piston (4) has depressions (7) running in Z-direction, which are coordinated with the clamping members (15) such that on tightening of the clamping element (2) an enlarged support surface is brought about between the respective clamping member (15) and the actuating piston (4).

12. The clamping arrangement according to Claim 10, **characterized in that** the upper side of the clamping module (2) is configured in frustum-shaped manner and the ejection element (19) is arranged in the centre of the frustum.

13. A clamping system with a clamping base (50, 50a), a workpiece carrier (44, 44a) and at least three clamping arrangements configured according to one of Claims 1 to 12, which has at least three clamping devices (1a, 1b, 1c, 1d) arranged on the clamping base (50, 50a) and a corresponding number of clamping elements (26a, 26b, 26c, 26d) arranged on the workpiece carrier (44, 44a), wherein the upper side of the clamping base (50, 50a) forms the X-Y plane, **characterized in that** the respective clamping device (1a, 1b, 1c, 1d) is provided with first centring elements (23a, 23b, 23c, 23d) and the associated clamping element (26a, 26b, 26c, 26d) with further centring elements (28a, 28b, 28c, 28d) corresponding thereto, for centring the respective clamping element (26a, 26b, 26c, 26d) with respect to the clamping device (1a, 1b, 1c, 1d) in a direction in the X-Y plane, wherein at least with two clamping devices (1a, 1b, 1c, 1d) and two clamping elements (26a, 26b, 26c, 26d) arranged in a corresponding manner thereto, the directions are different in the X-Y plane.

14. The clamping system according to Claim 13, **characterized in that** the clamping base (50) is configured substantially in a rectangular manner and has an even number of clamping devices (1a-1d), wherein at least in each corner region a clamping device (1a-1d) is arranged, and wherein the longitudinal axis centre axes (L1, L2) leading through the centring elements (23a-23d) of the respective clamping device (1a-1d) arranged in the corner region also lead through the centre of clamping devices (2a-2c; 2b-2d) lying diagonally opposite one another.

15. The clamping system according to Claim 13 or 14, **characterized in that** the workpiece carrier (44a) is configured in a substantially round manner and is provided with at least three clamping elements (26a-26d) arranged in its outer region, wherein the clamping elements (26a-26d) are arranged in particular such that the longitudinal axis centre axes (M1, M2) leading through the respective centring elements (26a-28d) of a clamping element (26a-26d) meet or intersect in the centre of the workpiece carrier (44a).

16. The clamping system according to Claim 13 or 14, **characterized in that** the workpiece carrier (44) is configured substantially in a rectangular manner and a clamping element (26a-26d) is arranged at least in each corner region, wherein the longitudinal axis centre axes leading through the centring elements (28a-28d) of the respective clamping elements (26a,26d) arranged in the corner region also lead through the centre of clamping elements (26a-26c; 26b-26d) lying diagonally opposite one another.

17. The clamping system according to Claim 15 or 16, **characterized in that** the respective clamping element (26a-26d) is arranged in a recess (45a-45d) of the workpiece carrier (44, 44a) such that its planar underside (29) as also the centring elements (28a-28d) is set back with respect to the underside (48) of the workpiece carrier (44, 44a).

18. A clamping element (26a-26d) for use in a clamping arrangement according to one of Claims 1 to 12 or in a clamping system according to one of Claims 13 to 17, **characterized in that** the clamping element (26) is configured substantially in an annular manner and has on the inner side an annularly circumferential clamping surface (27), on which clamping members (15) can abut for tightening, and that the clamping element (26) is provided at least partly with a planar underside (29) serving as Z-support.