Claims

1. Stamping press arrangement comprising at least two adjacent first stamping press units (4a-4c; 4d-4i), each of which has a press ram (1a, 1b, 1c) for receiving a first tool part, which works against a receiving plate (2a, 3a; 2b, 3b; 2c, 3c) for receiving a corresponding second tool part, wherein the first stamping press units (4a-4c; 4d-4i) have working directions (B) extending parallel to each other in a common plane, and comprising at least a second stamping press unit (8) having a press ram (5) for receiving a first tool part which works against a receiving plate (6, 7) for receiving a corresponding second tool part, wherein the working direction (A) of the at least one second stamping press unit (8) extends perpendicularly to the working directions (B) of the first stamping press units (4a-4c; 4d-4i), in such a way that material pieces or material strips processed in a working space of the second stamping press unit (8) can be guided in direct extension of the working direction (A) of the second stamping press unit (8) into working regions of the first stamping press units (4a-4c; 4d-4i) for further processing in the first stamping press units (4a-4c; 4d-4i) with material pieces or material strips supplied in working direction (B) of the first stamping press units (4a-4c; 4d-4i) to the first stamping press units,

wherein the at least two first stamping press units (4a-4c; 4d-4i) are driven via a common driving unit (24, 25, 26), wherein each of the respective first stamping press units (4a-4c; 4d-4i) has a crankshaft portion or eccentric shaft portion (28a, 28b, 28c), which is rotatable about a first rotation axis (R1) by the driving unit (24, 25, 26) in order to generate a travel movement of the press ram (1a, 1b, 1c) of the respective stamping press unit (4a-4c; 4d-4i), in interaction with at least one connecting rod (29a, 29b, 29c) of the

respective first stamping press unit (4a-4c; 4d-4i), for processing the material pieces and/or the material strips in the first stamping press units (4a-4c; 4d-4i), wherein the rotation axes (R1) of the crankshaft portions or eccentric shaft portions (28a, 28b, 28c) of the first stamping press units (4a-4c; 4d-4i) are identical and wherein the crankshaft portions or eccentric shaft portions (28a, 28b, 28c) of the first stamping press units (4a-4c; 4d-4i) are connected or coupled to one another in such a way that they are rotated forcibly together with the same number of rotations,

wherein the at least one second stamping press unit (8) has a crankshaft portion or eccentric shaft portion (30) which is rotatable about a second rotation axis (R2) by a driving unit (24, 25, 26, 33, 34), for generating in interaction with at least one connecting rod (31a, 31b) of the at least one second stamping press unit (8) a travel movement of the press ram (5) of the at least one second stamping press unit (8) for processing the material pieces or material strips in the second stamping press unit (8),

wherein the crankshaft portion or eccentric shaft portion (30) of the at least one second stamping press unit (8) is coupled to the crankshaft portions or eccentric shaft portions (28a, 28b, 28c) of the first stamping press units (4a-4c; 4d-4i) in such a way, particularly by a rotational positive fit in both rotation directions, that it is rotatable forcibly synchronously with the crankshaft portions or eccentric shaft portions (28a, 28b, 28c) of the first stamping press units (4a-4c; 4d-4i), particularly with the same number of rotations,

wherein multiple, particularly three or four, first stamping press units (4a-4c; 4d-4f; 4g-4i) arranged in an adjacent way are coupled to one another to form a common structure (4a-4c; 4d-4f; 4g-4i),

wherein the two outer ones of these first stamping press units (4a, 4c; 4d, 4f; 4g, 4i) coupled to one another to form a common structure are each coupled to a supporting structure (9, 11; 10, 11; 10a, 11a), via which the structure (4a-4c; 4d-4f; 4g-4i) formed by it is supported on the floor,

and wherein each one of the first stamping press units (4a-4c; 4d-4i) has an own receiving plate (2a, 3a; 2b, 3b; 2c, 3c) which is separate from the other stamping press units, each of which is supported by a hanging supporting structure.

2. Stamping press arrangement according to claim 1, wherein at least one of the supporting structures (10, 11), via which the structure (4a-4c; 4d-4f; 4g-4i) formed by the adjacent first stamping press units (4a-4c; 4d-4f; 4g-4i) is supported on the floor, carries on its side facing away from the mutually coupled first stamping press units (4a-4c; 4g-4i) the at least one second stamping press unit (8).

3. Stamping press arrangement according to claim 1 and to claim 2, wherein two groups of first stamping press units (4d-4f; 4g-4i), particularly two groups of each three first stamping press units (4d-4f; 4g-4i), are coupled to one another to a first common structure (4d-4f) and to a second common structure (4g-4i), wherein this first structure (4d-4f) and this second structure (4g-4i) are coupled to one another via a first supporting structure (10a, 11a) arranged between them, via which the first structure (4d-4f) and the second structure (4g-4i) are supported on the floor, wherein each outer first stamping press unit (4d; 4i) of the respective first (4d-4f) or second structure (4g-4i), respectively, is coupled to a further supporting structure (9, 11; 10, 11), via which it is supported on the floor, and wherein at least one of the further

supporting structures (9, 11; 10, 11) carries one of the second stamping press units (8) on its side facing away from the respective first (4d-4f) or second structure (4g-4i), respectively.

4. Stamping press arrangement according to one of the preceding claims, wherein the second rotation axis (R2) is parallel to the first rotation axis (R1), and particularly wherein it is identical with it.

5. Stamping press arrangement according to one of the preceding claims, wherein the first stamping press units (4a-4c; 4d-4i) have each a separate crankshaft portion or eccentric shaft portion (28a, 28b, 28c) and these crankshaft portions or eccentric shaft portions (28a, 28b, 28c) are coupled to one another by a rotational positive fit in both rotation directions, particularly in such a way that they are axially and radially shiftable with respect to one another, particularly by means of one or more Oldham couplings (32).

6. Stamping press arrangement according to one of the preceding claims, wherein the at least one second stamping press unit (8) has a separate crankshaft portion or eccentric shaft portion (30) which is coupled to one crankshaft portion or eccentric shaft portion (28c) of one of the first stamping press units (4c; 4i) by a rotational positive fit in both rotation directions, particularly in such a way that the two crankshaft portions or eccentric shaft portions (28c, 30) are axially and radially shiftable with respect to one another, particularly by means of an Oldham coupling (32).

7. Stamping press arrangement according to one of the preceding claims, wherein the press rams (1a,

1c, 1d, 5) of the stamping press units (4a-4c, 8; 4d-4i, 8) work each from the top against the receiving plates (2a, 3a; 2b, 3b; 2c, 3c; 6, 7).

8. Stamping press arrangement according to one of the preceding claims, wherein the crankshaft portions or eccentric shaft portions (28a, 28b, 28c, 30) are each arranged above the press rams (1a, 1b, 1c, 5).

9. Stamping press arrangement according to one of the preceding claims, wherein the driving unit (24, 25, 26) for the at least two first stamping press units (4a-4c; 4d-4i) has a flywheel (33) and no gears are arranged between the flywheel (33) and the crankshaft portions or eccentric shaft portions (28a, 28b, 28c) of the at least two first stamping press units (4a-4c; 4d-4i).

10. Stamping press arrangement according to one of the preceding claims, wherein each one of the first stamping press units (4a-4c; 4d-4i) has a supply device (13, 14, 15) for supplying individual material pieces into a working area of the respective stamping press unit (4a-4c; 4d-4i), particularly a conveyor belt (15) with holes (16) for supplying metal can shell blanks.

11. Stamping press arrangement according to claim 10, wherein the supply devices (13, 14, 15) are driven with the driving unit (24, 25, 26) for the at least two first stamping press units (4a-4c; 4d-4i).

12. Stamping press arrangement according to claim 11, wherein no separable clutches are present between the supply devices (13, 14, 15) and the driving unit (24, 25, 26).

13. Stamping press arrangement according to one of the claims 10 to 12, wherein the supply devices (13, 14, 15) are integrated into the receiving plates (2a, 3a; 2b, 3b; 2c, 3c) of the first stamping press units (4a-4c; 4d-4i).

14. Stamping press arrangement according to one of the preceding claims, wherein the stamping press arrangement in the drive train for the stamping press units (4a-4c, 8; 4d-4i, 8) has precisely one flywheel (33), precisely one friction (34) and precisely one brake (35).

15. Stamping press arrangement according to one of the preceding claims, wherein the first stamping press units (4a-4c; 4d-4i) in each case have precisely one connecting rod (29a, 29b, 29c), by means of which the stamping force is introduced centrally into the respective press ram (1a, 1b, 1c).

16. Stamping press arrangement according to one of the preceding claims, wherein the at least one second stamping press unit (8) has two connecting rods (31a, 31b), by means of which the stamping force is introduced symmetrically into its press ram (5).

17. Stamping press arrangement according to one of the preceding claims, wherein each one of the stamping press units (4a-4c, 8; 4d-4i, 8) has an own mass compensation device (36a, 36b, 36c, 37) for diminishing or eliminating dynamic forces acting towards the outside.

18. Stamping press arrangement according to one of the preceding claims, wherein each one of the stamping press units (4a-4c, 8; 4d-4i, 8) is adjustable independently from the other stamping press units with respect to press ram stroke and/or closing height.

19. Use of the stamping press unit according to one of the preceding claims for manufacturing metal can ends with a push-in or a pull-off tab.