Claims

1. Grate bar (10, 80, 120) for a furnace comprising
- a first air duct (46, 47, 66, 95, 126) at a first lateral side of the grate bar (10, 80, 120) the first air duct (46, 47, 66, 95, 126) being provided at an angle other than 90 degrees with respect to a longitudinal axis of the grate bar (10, 80, 120),
wherein the grate bar (10, 80, 120) comprises further air ducts (46, 47, 66, 95, 126) at the first lateral side of the grate bar (10, 80, 120), the further air ducts (46, 47, 66, 95, 126) having substantially the same inclination as the first air duct (46, 47, 66, 95, 126), the grate bar (10, 80, 120) further comprising a second air duct (46, 47, 66, 95, 126) at a second lateral side of the grate bar (10, 80, 120), the second lateral side being opposite to the first lateral side and the second air duct (46, 47, 66, 95, 126) having an inclination, the grate bar comprising further air ducts (46, 47, 66, 95, 126) at the second lateral side of the grate bar (10, 80, 120), the further air ducts (46, 47, 66, 95, 126) having substantially the same inclination as the second air duct (46, 47, 66, 95, 126), characterized in that the inclination of the second air duct (46, 47, 66, 95, 126) is substantially different from the inclination of the first air duct (46, 47, 66, 95, 126).

2. Grate bar (10, 80, 120) according to claim 1, wherein at least one air duct (46, 47, 66, 95, 126) is provided with a rectangular cross section.

3. Grate bar (10, 80, 120) according to claim 1 or claim 2, wherein at least one air duct (46, 47, 66, 95, 126) is provided with a saw tooth shaped cross section.

4. Grate for a furnace, the grate comprising an arrangement of fixed and movable grate bars (10, 80, 120) according to one of claims 1 to 3, the fixed and movable grate bars (10, 80, 120) comprising air ducts (46, 47, 66, 95, 126).

5. Grate arrangement for a furnace, the grate arrangement comprising an arrangement of fixed and movable grate bars (46, 47, 66, 95, 126), in which arrangement at least two neighbouring grate bars (10, 80, 120) of the arrangement comprise lateral air ducts (46, 47, 66, 95, 126) such that there is a cutting angle between the air ducts (46, 47, 66, 95, 126) of one of the neighbouring grate bars (10, 80, 120) and the air ducts (46, 47, 66, 95, 126) of the other one of the neighbouring grate bars (10, 80, 120).

6. Grate arrangement according to claim 5, wherein an angle of the lateral air ducts (46, 47, 66, 95, 126) against the longitudinal axes of the neighbouring grate bars (10, 80, 120) is about 60°, resulting in a cutting angle of about 60°.

7. Furnace with a grate arrangement according to one of claims 5 to 6.

8. Waste incineration plant with a grate arrangement according to one of claims 5 to 6.

9. Method for operating a grate of a furnace of an incineration plant, comprising
- providing an array of alternating grate bars (10, 80, 120) according to one of the claims 1 to 4, wherein the

grate bars (10, 80, 120) are provided with air ducts (46, 47, 66, 95, 126) that are facing each other;

- generating an alternating movement between neighbouring grate bars (10, 80, 120);

- moving neighbouring grate bars (10, 80, 120) relative to each other, wherein material particles in a region between neighbouring grate bars (10, 80, 120) are cut by edges of corresponding air ducts (46, 47, 66, 95, 126).

10. Grate bar (10, 80, 120) for a furnace according to claim 1, the grate bar (10, 80, 120) comprising at least one air duct (46, 47, 66, 95, 126) which extends along at least one side of the grate bar (10, 80, 120) from its lower surface to its upper surface.

11. Grate bar (10, 80, 120) according to claim 10, wherein the air ducts (46, 47, 66, 95, 126) are essentially evenly distributed along the at least one side.

12. Grate bar (10, 80, 120) according to claim 10, wherein groups of equidistant air ducts (46, 47, 66, 95, 126) are essentially evenly distributed along the at least one side.

13. Grate bar (10, 80, 120) according to one of the claims 10 to 13, wherein the air ducts (46, 47, 66, 95, 126) extend from below the upper surface of the grate bar (10, 80, 120) to an upper surface of the grate bar (10, 80, 120).

14. Grate bar (10, 80, 120) according to one of the claims 10 to 13, wherein the air ducts (46, 47, 66, 95, 126) are inclined against the longitudinal axis of the grate bar (10, 80, 120) to generate a cutting effect between neighbouring grate bars (10, 80, 120).

15. Grate arrangement with several grate bars the grate bars (10, 80, 120) comprising grooves (46, 47, 66, 95, 126) according to one of the claims 10 to 13, wherein at least two neighbouring surfaces of neighbouring grate bars (10, 80, 120) comprise air ducts (46, 47, 66, 95, 126) with differing inclination.