Summary of Invention

[0006] Accordingly, in a first aspect, the present invention provides a rimless toilet pan including:

a forward end;

a rearward end;

a pan bowl;

a flushing outlet in fluid communication with the pan bowl;

a flushing water inlet in fluid communication with the pan bowl;

an inwardly facing first sidewall extending substantially around the top of the pan bowl;

a substantially horizontal ledge extending substantially around the bottom of the first sidewall;

an inwardly facing second sidewall extending substantially around the pan bowl under the horizontal ledge;

a flushing water flow splitter substantially adjacent a rearward end of the first sidewall, the flow splitter in fluid communication with the flushing water inlet and having a leftwards outlet and a rightwards outlet;

a flushing water flow balancer on a frontwards part of the first sidewall, the flow balancer including an inwardly facing projection extending vertically through at least part of the height of the first sidewall in a flow path of flushing water and being positioned substantially symmetrically in relation to a forward to rearward centreline of the toilet pan.

[0007] The flow balancer preferably includes leftward and rightward angled surfaces which meet at an innermost edge that is substantially aligned with the forward to rearward centreline of the toilet pan. In one form, the edge is a substantially linear, preferably substantially vertical. In another form, the edge is a flat surface, preferably substantially vertical.

[0008] The ledge preferably follows the shape of the projection in the region of the flow balancer.

[0009] The flow splitter preferably also includes a downwards and inwards directed bottom outlet. The bottom outlet is preferably in the form of a gap between a bottom edge of the flow splitter and an adjacent rear wall of the pan bowl.

[0010] Preferably, when viewed from above, and with reference to 12 o'clock (front) and 6 o'clock (rear) being aligned on the centreline, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 5 o'clock and 7 o'clock respectively. Alternatively, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 4 o'clock and 8 o'clock respectively. Further alternatively, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 3 o'clock and 9 o'clock respectively.

[0011] In a second aspect, the present invention provides a method of flushing a rimless toilet pan, the method including:

directing flushing water from an inlet to a flow splitter having a leftwards and a rightwards outlet;

directing the water from each of the leftwards and the rightwards outlets along left and right inner sidewalls of the toilet pan as a left stream and a right stream respectively;

passing the left stream and the right stream over a flow balancer projection substantially frontward to rearward symmetrically positioned between the left and right inner sidewalls, and extending through at least part of the left and right inner sidewalls, to direct the left and right streams inwardly and away from the left and right inner sidewalls as a combined stream or jet.

[0012] The method preferably includes directing the left stream and the right stream along left and right ledges at a top of the left and right inner sidewalls.

[0013] The method preferably includes varying the shape of the flow balancer projection to adjust the trajectory and/or dispersion of the combined stream or jet.

Brief Description of Drawings

[0014] A preferred embodiment of the invention will now be described, by way of an example only, with reference to the accompanying drawings in which:

[0015] Fig. 1 is a rear perspective view of a first embodiment of a rimless toilet pan;

[0016] Fig. 2 is a front perspective view of the pan shown in Fig. 1;

CLAIMS

1. A rimless toilet pan including:

a forward end;

a rearward end;

a pan bowl;

a flushing outlet in fluid communication with the pan bowl;

a flushing water inlet in fluid communication with the pan bowl;

an inwardly facing first sidewall extending substantially around the top of the pan bowl;

a substantially horizontal ledge extending substantially around the bottom of the first sidewall;

an inwardly facing second sidewall extending substantially around the pan bowl under the horizontal ledge;

a flushing water flow splitter substantially adjacent a rearward end of the first sidewall, the flow splitter in fluid communication with the flushing water inlet and having a leftwards outlet and a rightwards outlet;

a flushing water flow balancer on a frontwards part of the first sidewall, the flow balancer including an inwardly facing projection extending vertically through at least part of the height of the first sidewall in a flow path of flushing water and being positioned substantially symmetrically in relation to a forward to rearward centreline of the toilet pan.

2. The rimless toilet pan as claimed in claim 1, wherein the flow balancer includes leftward and rightward angled surfaces which meet at an innermost edge that is substantially aligned with the forward to rearward centreline of the toilet pan.

3. The rimless toilet pan as claimed in claim 2, wherein the edge is a substantially linear.

4. The rimless toilet pan as claimed in claim 3, wherein the edge is substantially vertical.

5. The rimless toilet pan as claimed in claim 2, wherein the edge is a flat surface.

6. The rimless toilet pan as claimed in claim 5, wherein the edge is substantially vertical.

7. The rimless toilet pan as claimed in any one of the preceding claims, wherein the ledge follows the shape of the projection in the region of the flow balancer.

8. The rimless toilet pan as claimed in any one of the preceding claims, wherein the flow splitter also includes a downwards and inwards directed bottom outlet.

9. The rimless toilet pan as claimed in claim 8, wherein the bottom outlet is in the form of a gap between a bottom edge of the flow splitter and an adjacent rear wall of the pan bowl.

10. The rimless toilet pan as claimed in any one of the preceding claims, wherein, when viewed from above, and with reference to 12 o'clock (front) and 6 o'clock (rear) being aligned on the centreline, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 5 o'clock and 7 o'clock respectively.

11. The rimless toilet pan as claimed in any one of claims 1 to 9, wherein, when viewed from above, and with reference to 12 o'clock (front) and 6 o'clock (rear) being aligned on the centreline, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 4 o'clock and 8 o'clock respectively.

12. The rimless toilet pan as claimed in any one of claims 1 to 9, wherein, when viewed from above, and with reference to 12 o'clock (front) and 6 o'clock (rear) being aligned on the centreline, the leftwards outlet and the rightwards outlet are positioned around the sidewall at about 3 o'clock and 9 o'clock respectively.

13. A method of flushing a rimless toilet pan, the method including:

directing flushing water from an inlet to a flow splitter having a leftwards and a rightwards outlet;

directing the water from each of the leftwards and the rightwards outlets along left and right inner sidewalls of the toilet pan as a left stream and a right stream respectively;

passing the left stream and the right stream over a flow balancer projection substantially frontward to rearward symmetrically positioned between the left and right inner sidewalls, and extending through at least part of the left and right inner sidewalls, to direct the left and right streams inwardly and away from the left and right inner sidewalls as a combined stream or jet.

14. The method of flushing a rimless toilet pan as claimed in claim 13, wherein the method includes respectively directing the left stream and the right stream along left and right ledges at a top of the left and right inner sidewalls.

15. The method of flushing a rimless toilet pan as claimed in claim 13 or 14, wherein the method includes varying the shape of the flow balancer projection to adjust the trajectory and/or dispersion of the combined stream or jet.