

Claims

1. A floor outlet for receiving a water inflow, said floor outlet comprising
a spigot for connecting to a pipe
an inlet having two apertures, a first aperture for receiving the inflow of water and a second for venting air, said apertures in fluid communication with said spigot.
2. The floor outlet according to claim 1, further including a chamber intermediate the spigot and the apertures, said chamber having a cross sectional area greater than the spigot.
3. The floor outlet according to claim 2, wherein the chamber includes an upper section arranged to receive air from the pipe and vent air to the second aperture and a lower section arranged to receive the inflow from the first aperture and direct said inflow to the pipe.
4. The floor outlet according to any one of claims 1 to 3, wherein the first aperture is defined by a peripheral edge such that the edge is flush with a floor into which the floor outlet has been placed.
5. The floor outlet according to claim 4, wherein the second aperture is defined by an internal edge, such that the second aperture is positioned within the first aperture.
6. The floor outlet according to claim 5, wherein the chamber includes a canopy covering the upper section of the chamber forming a conduit from the second recess to the spigot.
7. An elbow for providing an angular connection between two pipes, the elbow comprising an inside radius and an outside radius;

wherein the inside radius is large relative to the pipe diameter.

8. The elbow according to claim 7, wherein the outside diameter is small relative to pipe diameter.
9. The elbow according to claim 7, wherein the outside radius less than the inside radius.
10. The elbow according to claim 7, wherein twice the inner radius is greater than or equal to 0.3 of the diameter of pipe.
11. The elbow according to claim 7, wherein a cross sectional area of the elbow along a line connecting a centre of the inner and outer radii is greater than the cross section of a pipe to which the elbow is connected.
12. An air release device for mounting to a pipe, the device comprising:
 - a housing defining a vertically oriented internal chamber;
 - an opening in a base of the chamber for receiving air from the pipe;
 - a vent at a top of the chamber for venting received air;
 - wherein a height of the chamber being equal to or greater than a width of the chamber.
13. The air release device according to claim 12, further including a tray within said chamber, said tray spanning horizontally across said chamber;
 - wherein said tray includes vents arranged to allow air to pass through said tray.

14. The air release device according to claim 13, further including a ball within said chamber and above said tray, said ball arranged to float on an inflow of water from the base and seal the top vent.
15. The air release device according to claim 12, further including at least one flap attached adjacent to the device top within said chamber, said flap arranged to move from an open position to a closed position, sealing the top vent on an inflow of water from the base and seal the top vent.
16. A branch pipe arrangement for branching from a vertical pipe, the branch pipe arrangement comprising:
- a branch junction mounted to said vertical pipe having a restricted cross section on a vertical portion forming a nozzle, said nozzle arranged to increase a velocity head of water passing through said nozzle,
 - an expansion chamber directly below the nozzle, said expansion chamber having a cross sectional area greater than a cross sectional area of the vertical pipe;
 - a branch portion projecting from the expansion chamber;
 - a floor outlet according to any one of claims 1 to 6, and;
 - a branch pipe connecting the branch portion to the floor outlet.
17. The branch pipe arrangement according to claim 16, further including an air release device according to any one of claims 12 to 15, said air release device mounted proximate to and in fluid communication with said branch portion.
18. The branch pipe arrangement according to claim 16 or 17, said branch pipe including a first elbow proximate the branch portion to direct the pipe horizontally.

19. The branch pipe arrangement according to claim 18, said branch pipe including two additional elbows intermediate the first elbow and the floor outlet.
20. The branch pipe arrangement according to claim 18 or 19, wherein at least one of said first elbow and additional elbows are according to the elbow of claims 8 to 11.
21. A method for separating an air path and an inflow path in a branch pipe, the method comprising the steps of:
- diverting flow and compressing flow in the vertical pipe to create a nozzle within the vertical pipe;
 - inducing pressure flow upstream of the nozzle and producing a water jet downstream of the nozzle, and so;
 - creating an air separation zone at an opening of said branch pipe;
 - receiving an inflow in a first aperture of an outlet at an opposed end of said branch pipe and venting air from a second aperture of said outlet, and consequently;
 - creating a continuous air path from the air separation zone to said second aperture, and a continuous inflow path from the first aperture to the vertical pipe.
22. The method according to claim 21, further comprising the steps of:
- re-directing air from the air path in the branch pipe into an air release device, and;
 - venting air from the air release device.
23. The method according to claim 21 or 22, further comprising the step of guiding the inflow path along a continuous curved surface in an elbow of the branch pipe intermediate the first aperture and the vertical pipe.

24. The method according to claim 23, further comprising the step of directing air into an enlargement adjacent the curved surface.