CLAIMS

1. An apparatus for reducing the water content of waste water sludge comprising a column for receiving waste water sludge, an outlet at a lower end of the column, a first closure for closing the outlet of the column, a controller for controlling the opening and closing of the closure, the controller being adapted to open and close the first closure to periodically discharge amounts of settled fines from the lower end of the column, and a water outlet adapted to receive water overflowing from an upper end of the column, wherein a porous barrier is provided for selectively closing a lower end of the column, said porous barrier communicating with a pressure reduction means for drawing water out of a lower end of the column through the porous barrier while retaining settled fines within the column.

2. An apparatus as claimed in claim 1, wherein said first closure comprise a gate valve.

3. An apparatus as claimed in claim 1 or claim 2, further comprising a second closure located above the first closure, said controller being adapted to close the second closure before or when opening the first closure to retain waste water sludge in the column above the second closure while settled fines below the second closure are discharged from the outlet at the lower end of the column.

4. An apparatus as claimed in claim 3, wherein the second closure comprises a gate valve.

5. An apparatus as claimed in any preceding claim, further comprising sensor means for determining the level of settled fines within the column, said controller being adapted to control opening and closing of the first closure as a function of the level of settled fines within the column.

~~6. An apparatus as claimed in claim 5~~, wherein the controller is programmed to open the first closure to discharge settled fines from the outlet at the lower end of the column when the sensor means determines that the level of settled fines is at a predetermined level within the column.

67. An apparatus as claimed in claim 56, when dependent upon claim 3 or claim 4, wherein the controller is adapted to close the second closure when the sensor means determines that the level of settled fines is at said predetermined level within the column.

~~8. An apparatus as claimed in claim 7~~, wherein said predetermined level is at or above the position of the second closure within the column.

79. An apparatus as claimed in claim 5 or claim 6~~any of claims 5 to 8~~, wherein said sensor means comprises one or more of an optical sensors or plurality of optical sensors detecting light transmission within the column; means for determining the torque applied to paddles or similar stirring means located at a predetermined height within the column; means for determining the weight of settled fines within a lower end of the column.

810. An apparatus as claimed in any preceding claim, wherein the water outlet communicates with a peripheral weir at an upper end of the column.

~~11. An apparatus as claimed in claim 10~~, wherein said water outlet is provided in a peripheral water collection chamber extending around an upper end of the column.

912. An apparatus as claimed in any preceding claim, wherein an inlet pipe extends downwardly into an upper end of the column for delivering waste water sludge into the column.

1013. An apparatus as claimed in claim 912, wherein said inlet pipe is arranged concentrically within the column.

1114. An apparatus as claimed in any preceding claim, wherein the column is defined by a tubular pipe.

~~15. An apparatus as claimed in claim 14, wherein said tubular pipe has~~ having a constant diameter and/or cross sectional area along its length.

12~~16~~. An apparatus as claimed in any preceding claim, wherein the column is mounted vertically or substantially vertically on a support frame.

~~17. An apparatus as claimed in any preceding claim, wherein a porous barrier is provided for selectively closing a lower end of the column, said porous barrier communicating with a pressure reduction means for drawing water out of a lower end of the column through the porous barrier while retaining settled fines within the column.~~

13~~18~~. An apparatus as claimed in ~~claim 17~~any preceding claim, when dependent upon claim 3~~ or 4~~, wherein the controller is adapted to bring the porous barrier into a position against the lower end of the column, retaining settled fines within the column, when the second closure is closed and the first closure is open to reduce the water content of settled fines located in the column below the second closure and to subsequently displace the porous barrier away from the lower end of the column to permit discharge of the settled fines from the column.

14~~19~~. An apparatus as claimed in claim 13~~18~~, wherein said porous barrier is defined by a belt of an endless belt conveyor adapted to received and carry settled fines discharged from the lower end of the column.

15~~20~~. A method of ~~for~~ reducing the water content of waste water sludge comprising the steps of delivering waste water sludge into a column having an outlet at a lower end of the column and a first closure for closing the outlet of the column, permitting fines to settle to a lower end of the column; ~~and~~ periodically opening the first closure under the control of a controller to discharge amounts of settled fines from the outlet at the lower end of the column while collecting water overflowing from an upper end of the column, and closing a lower end of the column with a porous barrier communicating with a pressure reduction means for drawing water out of said settled fines through the porous barrier to reduce the water content of the settled fines before discharging said settled fines from the lower end of the column.

~~21. A method as claimed in claim 20, further comprising the step of closing a second closure located in the column above the first closure when or before opening the first closure to retain waste water sludge in the column above the second closure while settled fines are discharged from the column.~~

~~22. A method as claimed in claim 21, comprising the step of closing a lower end of the column with a porous barrier communicating with a pressure reduction means for drawing water out of said settled fines through the porous barrier to reduce the water content of the settled fines before discharging said settled fines from the lower end of the column.~~

~~23. A method as claimed in any of claims 20 to 21, wherein the first closure is opened to discharge an amount of settled fines from the lower end of the column when sensor means determines that the settled fines have reached a predetermined level within the column.~~

~~24. A method as claimed in 21 or 22, wherein the second closure is closed to retain waste water sludge within the column and the first closure is opened to discharge an amount of settled fines from the lower end of the column when the sensor means determines that the settled fines have reached a predetermined level within the column.~~

~~25. A method as claimed in claim 24, wherein said predetermined level is at or above the level of the second closure.~~