

**CONCRETE WASTE RECYCLING DEVICE
BACKGROUND OF THE INVENTION**

1. Field of the Invention

The present invention relates to a recycle device of concrete waste, and more particularly to a recycle device that may recycle and reuse all of the waste of the concrete completely.

2. Description of the Related Art

A conventional recycle device of concrete waste in accordance with the prior art shown in Fig. 1 comprises the following steps.

After the truck is washed in a washing car parking lot 10, the concrete waste (including the washing water, sand, stone and cement) will flow into the discharge vessel 11, and may then flow into the recycle tank 12 that may perform the work of separating the sand/stone and the sewage. At this time, a first power is used. Then, the sewage is drained through the water drain tank 13 into the mixing sedimentary tank 14. The sand/stone is passed through a stone vibration screen 15 with a second power, and a sand recycle machine 16 with a third power, so that the sand and the stone may be separated and recycled respectively. The sewage in the mixing sedimentary tank 14 may be directly supplied into an aggregate bin 17, and may also pass through mixing sedimentary tanks 18 and 19 to be supplied to washing car parking lot 10.

However, the conventional recycle device of concrete waste has the following disadvantages.

1. The conventional recycle device of concrete waste needs many power sources, and need much water source.

2. The conventional recycle device of concrete waste only has three mixing sedimentary tanks 14, 18 and 19 each having a stirrer, so that the sewage cannot be separated efficiently, thereby affecting the water filtering effect.

3. The three mixing sedimentary tanks 14, 18 and 19 will produce many dead corners that may deposit the mud, so that the mud easily deposits on the pipes and the water motor.

SUMMARY OF THE INVENTION

The present invention has arisen to mitigate and/or obviate the disadvantage of the conventional recycle device of concrete waste.

The primary objective of the present invention is to provide a recycle device of concrete waste including a roller type classifier and a water tank set to accomplish all of the mixing, depositing and recycling work of the sand, stone and sewage. Thus, the requirements of the power and the water source are very small. In addition, the recycle device of the present invention occupies small space, and has a simple process. Further, the recycle device of the present invention may recycle and reuse all of the waste of the concrete completely.

In accordance with the present invention, there is provided a recycle device of concrete waste, comprising:

a washing car parking lot, providing a site for washing a concrete truck, and all of waste gathered in a discharge vessel to be drained outward;

a roller type classifier, being a cylindrical body that may be rotated by a motor, and provided with a cylindrical knitting net that may be rotated by the motor, a plurality of sand/stone stirring guide plates mounted in the

cylindrical knitting net, the cylindrical knitting net having a first end connected to an inlet at an end face of the roller type classifier, and a second end that may retain an opening of the cylindrical body of the roller type classifier at a predetermined position, an inner wall of the cylindrical body of the roller type classifier provided with sand guide blades and stone guide blades arranged in a helical manner, the sand guide blades and the stone guide blades connected at an opening of the cylindrical knitting net, the cylindrical body of the roller type classifier having two sides each provided with an outlet, and each mated with a wind mill type lift chute that may be co-axially rotated with the cylindrical knitting net for draining the sand/stone, a washing pipe of a high pressure mounted on an upper portion of the inner wall of the cylindrical body of the roller type classifier, a water drain hole mounted on a lower portion of the cylindrical body of the roller type classifier, the inlet supporting waste drained from the discharge vessel;

a water tank set, including a first sewage recycle tank connected to the drain hole of the roller type classifier, the first sewage recycle tank with a hexagonal body being provided with a stirrer, and having a lower water inlet connected to a second sewage recycle tank that has a hexagonal body and is provided with a stirrer, the second sewage recycle tank having an upper water inlet connected to a sewage stirring tank that has a hexagonal body and is provided with a stirrer, the sewage stirring tank having an upper water inlet connected to a first sewage sedimentary tank, the first sewage sedimentary tank having a lower water inlet connected to a second sewage sedimentary tank, the second sewage sedimentary tank having an upper water inlet connected to a

clean water recycle tank that has a rectangular body, the clean water recycle tank having a water drain pipe connected to the washing car parking lot; and an aggregate bin, being a concrete mixing machine, and connected to a water drain pipe of the second sewage recycle tank.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic flow chart of a conventional recycle device of concrete waste in accordance with the prior art;

Fig. 2 is a flow arrangement view of a recycle device of concrete waste in accordance with the present invention;

Fig. 3 is a plan view of the recycle device of concrete waste in accordance with the present invention;

Fig. 4 is a cross-sectional view of a roller type classifier of the recycle device of concrete waste in accordance with the present invention; and

Fig. 5 is a plan view of the roller type classifier of the recycle device of concrete waste in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figs. 2-5, a recycle device of concrete waste in accordance with the present invention comprises a washing car parking lot 20, a roller type classifier 30, a water tank set, and an aggregate bin 51.

The washing car parking lot 20 may provide a site for washing the concrete truck, and all of the waste may be gathered in a discharge vessel 21 to be drained outward.

The roller type classifier 30 as shown in Fig. 4 is a cylindrical body that may be rotated by a motor, and is provided with a cylindrical knitting net 31 that may be rotated by the motor. A plurality of sand/stone stirring guide plates 32 are mounted in the cylindrical knitting net 31. The cylindrical knitting net 31 has a first end connected to an inlet 37 at an end face of the roller type classifier 30, and a second end that may retain the opening of the cylindrical body of the roller type classifier 30 at a predetermined position. The inner wall of the cylindrical body of the roller type classifier 30 is provided with sand guide blades 33 and stone guide blades 34 arranged in a helical manner. The sand guide blades 33 and the stone guide blades 34 are connected at the opening of the cylindrical knitting net 31. The cylindrical body of the roller type classifier 30 has two sides each provided with an outlet 36, and each mated with a wind mill type lift chute 35 that may be co-axially rotated with the cylindrical knitting net 31 for draining the sand/stone. A washing pipe 38 of a high pressure is mounted on the upper portion of the inner wall of the cylindrical body of the roller type classifier 30, and a water drain hole 39 is mounted on the lower portion of the cylindrical body of the roller type classifier 30. The inlet 37 may support the waste drained from the discharge vessel 21, and a maintenance door 53 (see Fig. 5) is mounted on the cylindrical body of the roller type classifier 30.

The water tank set includes a first sewage recycle tank 40 connected to the drain hole 39 of the roller type classifier 30. The first sewage recycle tank 40 having a hexagonal body is provided with a stirrer 50, and has a lower water inlet 48 connected to a second sewage recycle tank 41 that has a hexagonal body and is provided with a stirrer 50. The second sewage recycle tank 41 has an upper water inlet 49 connected to a sewage stirring tank 43 that has a hexagonal body and is provided with a stirrer 50. The sewage stirring tank 43 includes a first portion 43A and a second portion 43B connected with each other. The sewage stirring tank 43 has an upper water inlet 49 connected to a first sewage sedimentary tank 45 that has a rectangular body. The first sewage sedimentary tank 45 has a lower water inlet 48 connected to a second sewage sedimentary tank 46 that has a rectangular body. The second sewage sedimentary tank 46 has an upper water inlet 49 connected to a clean water recycle tank 47 that has a rectangular body. Finally, the water motor 42 of the clean water recycle tank 47 may connect a water drain pipe to the washing car parking lot 20.

The aggregate bin 51 is a concrete mixing machine, and is connected to the water drain pipe of the second sewage recycle tank 41.

The process of the present invention is controlled by a control case 52.

Referring to Figs. 2-4, the sand/stone may be recycled as follows.

When all of the waste from the washing car parking lot 20 gathered in the discharge vessel 21 is drained outward, the waste is first placed into the roller type classifier 30. Referring to Fig. 4, the sand, stone and sewage are

conveyed through the inlet 37 into the cylindrical knitting net 31 that may be rotated by the motor. The sand and stone may then drop down, and may be stirred by rotation of the sand/stone stirring guide plates 32, so that the sand may be dropped down through the meshes of the cylindrical knitting net 31, and the stone remain in the cylindrical knitting net 31. The sand guide blades 33 outside of the cylindrical knitting net 31 may be rotated to guide the sand toward the lift chute 35 at one side to be drained out from the outlet 36. The sand may then be conveyed through a sand conveyor into a sand stacking lot 25.

Relatively, by rotation of the sand/stone stirring guide plates 32 in the cylindrical knitting net 31, the stone may be guided toward the opening at the other end to drop out of the cylindrical knitting net 31, and may fall in the stone guide blades 34 arranged in a helical manner. The stone may be stirred by rotation of the stone guide blades 34, and may be guided toward the lift chute 35 at the other side to be drained out from the outlet 36 at the other side. The stone may then be conveyed through a stone conveyor into a stone stacking lot 24.

After the sand and stone are drained out, the sewage may be drained out through the water drain hole 39, and may be guided into the first sewage recycle tank 40.

The washing pipe 38 of a high pressure mounted on the upper portion of the inner wall of the cylindrical body of the roller type classifier 30 may accelerate the water flow, and may prevent the cylindrical knitting net 31 in the roller type classifier 30 being bonded and cured by the cement.

Now, again referring to Figs. 2-4, the sewage may be recycled as follows.

The stirrer 50 of the sewage stirring tank 43 is opened, and other stirrers 50 are closed initially. The sewage first enters the first sewage recycle tank 40 to press the sewage that has been deposited at the lower portion of the first sewage recycle tank 40 to enter the second sewage recycle tank 41 through the lower water inlet 48, to press the sewage that has been deposited at the upper portion of the second sewage recycle tank 41 to enter the sewage stirring tank 43 through the upper water inlet 49. By the stirring motion of the stirrer 50, the mud of the sewage contained in the sewage stirring tank 43 begins to be activated, and may enter the first sewage sedimentary tank 45 through the upper water inlet 49, to press the water that has been deposited at the lower portion of the first sewage sedimentary tank 45, so that the water may be forced to enter the second sewage sedimentary tank 46 through the lower water inlet 48, and the sewage may be deposited again. Thus, the water level lifts gradually, so that the water may enter the clean water recycle tank 47 through the upper water inlet 49. Finally, the recycled water may be conveyed to the washing car parking lot 20 through the water drain pipe of the clean water recycle tank 47.

When the aggregate bin 51 needs to mix the cement, the sewage drained out from the water drain hole 39 of the roller type classifier 30 may be supplied to the aggregate bin 51. After the sewage enters the first sewage recycle tank 40, all of the stirrers 50 are opened, so that the mud contained in the sewage will not be deposited on the bottom of the tank. At this time, the

mixer of cement and water in the first sewage recycle tank 40 may be supplied into the aggregate bin 51 to mix with the cement, thereby obtaining the optimal mixing effect.

In conclusion, the recycle device of concrete waste in accordance with the present invention comprises a roller type classifier and a water tank set to accomplish all of the mixing, depositing and recycling work of the sewage. Thus, the requirements of the power and the water source are small. In addition, the recycle device of the present invention occupies small space, and has a simple process. Further, the recycle device of the present invention may recycle and reuse all of the waste of the concrete completely.

While the preferred embodiment of the present invention has been shown and described, it will be apparent to those skilled in the art that various modifications may be made in the embodiment without departing from the spirit of the present invention. Such modifications are all within the scope of the present invention.

WHAT IS CLAIMED IS:



1. A recycle device of concrete waste, comprising:

a washing car parking lot, providing a site for washing a concrete truck, and all of waste gathered in a discharge vessel to be drained outward;

a roller type classifier, being a cylindrical body that may be rotated by a motor, and provided with a cylindrical knitting net that may be rotated by the motor, a plurality of sand/stone stirring guide plates mounted in the cylindrical knitting net, the cylindrical knitting net having a first end connected to an inlet at an end face of the roller type classifier, and a second end that may retain an opening of the cylindrical body of the roller type classifier at a predetermined position, an inner wall of the cylindrical body of the roller type classifier provided with sand guide blades and stone guide blades arranged in a helical manner, the sand guide blades and the stone guide blades connected at an opening of the cylindrical knitting net, the cylindrical body of the roller type classifier having two sides each provided with an outlet, and each mated with a wind mill type lift chute that may be co-axially rotated with the cylindrical knitting net for draining the sand/stone, a washing pipe of a high pressure mounted on an upper portion of the inner wall of the cylindrical body of the roller type classifier, a water drain hole mounted on a lower portion of the cylindrical body of the roller type classifier, the inlet supporting waste drained from the discharge vessel;

a water tank set, including a first sewage recycle tank connected to the drain hole of the roller type classifier, the first sewage recycle tank with a hexagonal body being provided with a stirrer, and having a lower water inlet

connected to a second sewage recycle tank that has a hexagonal body and is provided with a stirrer, the second sewage recycle tank having an upper water inlet connected to a sewage stirring tank that has a hexagonal body and is provided with a stirrer, the sewage stirring tank having an upper water inlet connected to a first sewage sedimentary tank, the first sewage sedimentary tank having a lower water inlet connected to a second sewage sedimentary tank, the second sewage sedimentary tank having an upper water inlet connected to a clean water recycle tank that has a rectangular body, the clean water recycle tank having a water drain pipe connected to the washing car parking lot; and an aggregate bin, being a concrete mixing machine, and connected to a water drain pipe of the second sewage recycle tank.

2. The recycle device of concrete waste in accordance with claim 1, wherein the water tank set has a rear portion that may be additionally provided with a predetermined number of sewage sedimentary tanks.

3. The recycle device of concrete waste in accordance with claim 1, further comprising a stone conveyor for conveying the stone into a stone stacking lot, and a sand conveyor for conveying the sand into a sand stacking lot.

4. The recycle device of concrete waste in accordance with claim 1, further comprising a maintenance door mounted on the cylindrical body of the roller type classifier.

