

SOIL AND WATER SEPARATION DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to a filtering device, and more particularly to a soil and water separation device by using the
5 filtering plate to filter slurry and wastewater.

BACKGROUND OF THE INVENTION

[0002] Nowadays, the sludge is injected to a sedimentation pool. After standing for a long time, the slurry and the wastewater are separated from each other due to different densities. The slurry is
10 deposited at bottom of the sedimentation pool and the wastewater on the slurry may be drawn out. Therefore, the slurry and the wastewater are separated from each other. They are basked in the sun on a large-area ground. It is not dry enough. If it rains, they are polluted repeatedly and also dried repeatedly. It is not convenient.

15 [0003] According to above mentioned method, because it needs to spend much time to stand to separate the slurry and the wastewater, many sedimentation pools are necessary to separate lots of sludge. Many sedimentation pools are used to achieve above necessities. However, many sedimentation pools may occupy large space and
20 lots of pipelines are needed to transmit the sludge to different sedimentation pools. And many valves are used to operate automatically or manually. A continuous sludge process device is formed after above procedures. The cost is high. The maintenance

and clean are inconvenient. It is hard to satisfy user's demands.

[0004] In view of the foregoing circumstances, the inventor has invested a lot of time to study the relevant knowledge, compare the pros and cons, research and develop related products. After quite
 5 many experiments and tests, the "soil and water separation device" of this invention is eventually launched to improve the foregoing shortcomings, to meet the public use.

SUMMARY OF THE INVENTION

[0005] An object of this invention is providing a filtering device, and
 10 more particularly to a soil and water separation device by using the filtering plate to filter slurry and wastewater.

[0006] To achieve above objects, a soil and water separation device, comprising a main body, a front end thereof has a plurality of stop plates and a plurality of scrapers, an accommodating base is
 15 arranged at a suitable location, a filtering groove is arranged at a lower end of the accommodating base, the stop plates are arranged in front of the main body and spaced apart from each other and defined a plurality of discharge gates, the scrapers are arranged at an upper end of the stop plates and each scraper includes a scraper frame and
 20 two blades; a transmission member, having a motor, a shaft, a rotator, and a plurality of connection pipes, the transmission member is arranged in the accommodating base of the main body, the shaft is arranged on the motor, the rotator is pivoted to the shaft so as to

operate with the motor synchronously, and the connection pipes are radially spaced apart from each other and arranged on the rotator; a plurality of filtering plates, arranged on the rotator correspondingly, each filtering plate may contact with the blade of the scraper while
5 the transmission member is operated, and each filtering plate has a connection tube; and a storing member, arranged at one side of the main body, the storing member includes a water pump and an air pump, the water pump is fluidly communicated with a first transmission pipe which is arranged in the rotator, the air pump is
10 fluidly communicated with a second transmission pipe which is arranged in the rotator.

[0007] In some embodiments, a holding member is arranged outside of the discharge gates.

[0008] In some embodiments, a guiding channel for receiving the
15 first transmission pipe and the second transmission pipe is arranged in the shaft.

[0009] In some embodiments, the filtering plates are made of ceramics.

[0010] In some embodiments, a conveyor is arranged out of the
20 discharge gates.

[0011] Further features and advantages of the present invention will become apparent to those of skill in the art in view of the detailed description of preferred embodiments which follows, when

considered together with the attached drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] All the objects, advantages, and novel features of the invention will become more apparent from the following detailed
5 descriptions when taken in conjunction with the accompanying drawings.

[0013] FIG. 1 is a perspective view of a soil and water separation device of the present invention.

[0014] FIG. 2 is a side view of the soil and water separation device of
10 the present invention.

[0015] FIGs. 3 to 5 are operational views of the soil and water separation device of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] Referring now to the drawings where like characteristics and
15 features among the various figures are denoted by like reference characters. FIG. 1 is a perspective view of a soil and water separation device of the present invention. FIG. 2 is a side view of the soil and water separation device of the present invention. FIGs. 3 to 5 are operational views of the soil and water separation device of the
20 present invention.

[0017] Please refer to FIGs. 1 to 5, a soil and water separation device of the present invention mainly comprises a main body 1, a transmission member 2, a plurality of filtering plates 3, and a storing member 4. A front end of the main body 1 has a plurality of stop plates 11 and a plurality of scrapers 12. An accommodating base 13 is arranged at a suitable location. A filtering groove 131 is arranged at a lower end of the accommodating base 13. The stop plates 11 are arranged in front of the main body 1 and spaced apart from each other and defined a plurality of discharge gates 14. The scrapers 12 are arranged at an upper end of the stop plates 11 and each scraper 12 includes a scraper frame 121 and two blades 122. The transmission member 2 has a motor 2, a shaft 22, a rotator 23, and a plurality of connection pipes 24. The transmission member 2 is arranged in the accommodating base 13 of the main body 1. The shaft 22 is arranged on the motor 21. The rotator 23 is pivoted to the shaft 22 so as to operate with the motor synchronously. And the connection pipes 24 are radially spaced apart from each other and arranged on the rotator 23. The filtering plates 3 are arranged on the rotator 23 correspondingly. Each filtering plate 3 may contact with the blade 122 of the scraper 12 while the transmission member 2 is operated. And each filtering plate 3 has a connection tube 31. The storing member 4 is arranged at one side of the main body 1. The storing member 4 includes a water pump 41 and an air pump 42. The water pump 41 is fluidly communicated with a first transmission pipe 43 which is arranged in the rotator 23. The air pump 42 is fluidly communicated with a second transmission pipe 44 which is arranged in the rotator 23.

[0018] A holding member 141 is arranged outside of the discharge gates 14. The holding member 141 mainly provides to hold the impurities scraped by the scrapers 12 so that it may not pollute the environment. Furthermore, a conveyor is arranged out of the
5 discharge gates 14 for transmitting the impurities away therefrom.

[0019] In addition, a guiding channel 221 for receiving the first transmission pipe 43 and the second transmission pipe 44 is arranged in the shaft 22. A negative pressure is formed therein and the air is drawn in while the filtering plates 3 rotate to a specific region. And
10 then, when the filtering plates 3 rotate to scrapers 12, the impurities may be scraped by the scrapers 12. Finally, when the filtering plates 3 rotate to another specific region, the filtering plates 3 are cleaned by water with high pressure so as to separate the impurities therefrom and then put in the filtering groove 131 to soak in the slurry to repeat
15 filtering process.

[0020] The filtering plates 3 are made of ceramics which has thermostability, chemical resistance, better mechanical strength, better self-clean state, high filter efficiency, high filter precision, and better filter speed. It may improve the efficiency of filtering the slurry
20 and the wastewater to increase the efficiency of recycling water.

[0021] In conclusion, this invention is mainly used to filter the industrial slurry and wastewater inputted from a feeding tube 5. The wastewater is hold in the filtering groove 131 after injecting. After the soil and water separation device is activated, the motor 21 drives the

shaft 22 to operate the transmission member 2 and the filtering plates 3 radially arranged on the rotator 23 of the transmission member 2 are soaked in the slurry and wastewater. The filtering plates 3 rotate to make the connection tube 31 close to the connection pipe 24 and the air pump 42 vacuums with the second transmission pipe 44. The filtering plates 3 rotate to the scrapers 12 and the blades 122 on the scraper frame 121 scrape the impurities on the filtering plates 3. The impurities are discharged to the holding member 141 by the arrangement of the discharge gates 14 and the stop plates 11. And then, the water pump 41 draws out the high-pressure water through the first transmission pipe 43 to flush the impurities from the filtering plates 3. The above mentioned process is repeated and the slurry and the wastewater received in the filtering groove 131 are gradually cleaned so as to reuse and recycle to achieve the effect of environmental protection.

[0022] The foregoing descriptions are merely the exemplified embodiments of the present invention, where the scope of the claim of the present invention is not intended to be limited by the embodiments. Any equivalent embodiments or modifications without departing from the spirit and scope of the present invention are therefore intended to be embraced.

[0023] The disclosed structure of the invention has not appeared in the prior art and features efficacy better than the prior structure which is construed to be a novel and creative invention, thereby filing the present application herein subject to the patent law.

What is claimed is:

1. A soil and water separation device, comprising:

a main body, a front end thereof has a plurality of stop plates and a plurality of scrapers, an accommodating base is arranged at a suitable location, a filtering groove is arranged at a lower end of the accommodating base, the stop plates are arranged in front of the main body and spaced apart from each other and defined a plurality of discharge gates, the scrapers are arranged at an upper end of the stop plates and each scraper includes a scraper frame and two blades;

a transmission member, having a motor, a shaft, a rotator, and a plurality of connection pipes, the transmission member is arranged in the accommodating base of the main body, the shaft is arranged on the motor, the rotator is pivoted to the shaft so as to operate with the motor synchronously, and the connection pipes are radially spaced apart from each other and arranged on the rotator;

a plurality of filtering plates, arranged on the rotator correspondingly, each filtering plate may contact with the blade of the scraper while the transmission member is operated, and each filtering plate has a connection tube; and

a storing member, arranged at one side of the main body, the storing member includes a water pump and an air pump, the

water pump is fluidly communicated with a first transmission pipe which is arranged in the rotator, the air pump is fluidly communicated with a second transmission pipe which is arranged in the rotator.

- 5 2. The soil and water separation device as claimed in claim 1, wherein a holding member is arranged outside of the discharge gates.
3. The soil and water separation device as claimed in claim 1, wherein a guiding channel for receiving the first transmission pipe
10 and the second transmission pipe is arranged in the shaft.
4. The soil and water separation device as claimed in claim 1, wherein the filtering plates are made of ceramics.
5. The actuating device as claimed in claim 1, wherein a conveyor is arranged out of the discharge gates.