Claims

1. A carbon dioxide (CO2) extraction system comprising:

a chamber defining a water inlet, a water outlet and a gas inlet where exhaust gas containing CO2 is introduced;

an atomizer coupled to the water inlet and disposed adjacent the gas inlet for atomizing water and directing the atomized water substantially towards the exhaust gas introduced into the chamber at the gas inlet; and

a wheel received within and rotatably coupled to the chamber, the wheel defining a rotational axis and comprising a plurality of paddles with each thereof defining a paddle plane being substantially parallel the rotational axis and defining a plurality of pores therein, the wheel being disposed to position at least one of the plurality of paddles between the gas inlet and the water outlet on a down-turn, the atomized water absorbing a portion of the CO2 in the exhaust gas when discharged from the atomizer and being caught by at least one of the plurality of paddles disposed between the gas inlet and the water outlet on a down-turn to thereby displace the at least one of the plurality of paddles about the rotational axis and towards the water outlet,

wherein the water on the at least one of the plurality of paddles draining through the plurality of pores and sliding from the at least one of the plurality of paddles for discharged from the chamber through the water outlet during displacement of the paddles about the rotational axis, and

wherein the CO2 content in the exhaust gas introduced into the chamber is reduced.

2. The carbon dioxide (CO2) extraction system as in claim 1, the chamber further defining a gas outlet for discharging the CO2-reduced exhaust gas from the chamber.

3. The carbon dioxide (CO2) extraction system as in claim 1, each of the plurality of paddles being formed from at least metal foam defining the plurality of pores.

4. The carbon dioxide (CO2) extraction system as in claim 1, each of the plurality of paddles being a substantially planar structure for defining the paddle plane.

5. The carbon dioxide (CO2) extraction system as in claim 1, further comprising:

a circulatory pathway for returning water directing at least a portion of the water drained from the water outlet back to the water inlet.

6. The carbon dioxide (CO2) extraction system as in claim 5, further comprising:

a pump formed integral with the circulatory pathway for displacing the water in the circulatory pathway from the water outlet to the water inlet.

7. The carbon dioxide (CO2) extraction system as in claim 5, further comprising:

a decarbonator formed integral the circulatory pathway for extracting and exhausting a portion of the CO2 from the water displaced along the circulatory pathway.

8. The carbon dioxide (CO2) extraction system as in claim 1, further comprising a circulatory pathway comprising at least one pipe structure for the transport of water therealong.

9. The carbon dioxide (CO2) extraction system as in claim 1, the atomizer being one of at least one nozzle-shaped for and an ultrasonic atomizer for atomizing water introduced at the water inlet into the chamber.

10. The carbon dioxide (CO2) extraction system as in claim 1, the plurality of paddles extends substantially radially from the rotational axis of the wheel.

11. A carbon dioxide (CO2) extraction method comprising:

introducing exhaust gas containing CO2 into a chamber defining a water inlet, a water outlet and a gas inlet;

directing atomized water by an atomizer substantially towards the exhaust gas introduced into the chamber at the gas inlet, the atomizer being coupled to the water inlet and disposed adjacent the gas inlet; and

positioning at least one of a plurality of paddles of a wheel between the gas inlet and the water outlet on a down-turn, the wheel being received within and rotatably coupled to the chamber, the wheel defining a rotational axis and comprising the plurality of paddles with each thereof defining a paddle plane being substantially

parallel the rotational axis and defining a plurality of pores therein, the atomized water absorbing a portion of the CO2 in the exhaust gas when discharged from the atomizer and being caught by at least one of the plurality of paddles disposed between the gas inlet and the water outlet on a down-turn to thereby displace the at least one of the plurality of paddles about the rotational axis and towards the water outlet; and

discharging the water draining through the plurality of pores and sliding from the at least one of the plurality of paddles through the water outlet and from the chamber during displacement of the paddles about the rotational axis,

wherein the CO2 content in the exhaust gas introduced into the chamber is reduced.

12. The carbon dioxide (CO2) extraction method as in claim 11, further comprising:

discharging the CO2-reduced exhaust gas from the chamber through a gas outlet defined by the chamber.

13. The carbon dioxide (CO2) extraction method as in claim 11, each of the plurality of paddles being formed from at least metal foam defining the plurality of pores.

14. The carbon dioxide (CO2) extraction method as in claim 11, each of the plurality of paddles being a substantially planar structure for defining the paddle plane.

15. The carbon dioxide (CO2) extraction method as in claim 11, further comprising:

a circulatory pathway for returning water directing at least a portion of the water drained from the water outlet back to the water inlet.

16. The carbon dioxide (CO2) extraction method as in claim 15, further comprising:

a pump formed integral with the circulatory pathway for displacing the water in the circulatory pathway from the water outlet to the water inlet.

17. The carbon dioxide (CO2) extraction method as in claim 15, further comprising:

a decarbonator formed integral the circulatory pathway for extracting and exhausting a portion of the CO2 from the water displaced along the circulatory pathway.

18. The carbon dioxide (CO2) extraction method as in claim 11, further comprising a circulatory pathway comprising at least one pipe structure for the transport of water therealong.

19. The carbon dioxide (CO2) extraction method as in claim 11, the atomizer being one of at least one nozzle-shaped for and an ultrasonic atomizer for atomizing water introduced at the water inlet into the chamber.

20. The carbon dioxide (CO2) extraction method as in claim 11, the plurality of paddles extends substantially radially from the rotational axis of the wheel.