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(12) **United States Patent**
Walker

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(54) **IRON-BASED DESALINATION**

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C02F 1/70	(2006.01)
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CPC ***C02F 1/281*** (2013.01); ***B01D 61/04*** (2013.01); ***B01J 20/0229*** (2013.01); ***C02F 1/288*** (2013.01); ***C02F 1/441*** (2013.01); ***C02F 1/705*** (2013.01); ***C22B 5/00*** (2013.01);

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USPC 210/638, 652, 653, 660, 679, 681, 739; 423/138–140; 502/400, 406; 977/773, 977/778, 810

See application file for complete search history.

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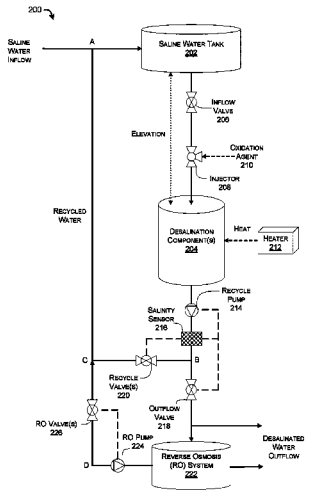
(57) **ABSTRACT**

Systems, devices, and techniques described herein relate to iron-based desalination of water. In some cases, an inflow of water including chlorine and sodium can be received. A plurality of iron nanoparticles may capture the chlorine and the sodium. The iron nanoparticles may at least partially include Zero Valent Iron (ZVI). An outflow of the water may be emitted. The chlorine and the sodium may be omitted from the outflow.

20 Claims, 10 Drawing Sheets