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(71) Applicants (for all designated States except US):

EXXONMOBIL RESEARCH AND ENGINEERING COMPANY [US/US]; 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US). **TIAX LLC** [US/US]; 15 Acorn Park, Cambridge, MA 02140-2328 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHOTTRAY, San** [US/US]; 6448 Muster Court, Centreville, NJ 20121 (US). **RUDY, Thomas, M.** [US/US]; 8336 Stable Gate Road, Warrenton, VA 20186 (US). **JUEDES, Dennis, L.** [US/US]; 8100 Crooked Oaks Court, Gainesville, VA

20155 (US). **NORTON, James, P.** [US/US]; 133 North Pleasant Avenue, Ridgewood, NJ 07450 (US). **BENSON, Charles, E.** [US/US]; 18 Bear Hill Road, Windham, NH 03087 (US).

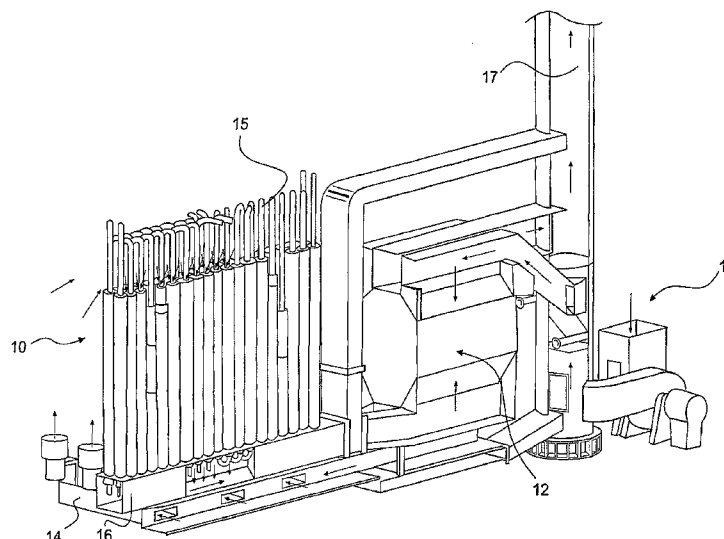
(74) Agents: **BAKUN, Estelle, C.** et al.; EXXONMOBIL RESEARCH AND ENGINEERING COMPANY, 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US).

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[Continued on next page]

(54) Title: AN ADVANCED FIRED HEATER UNIT FOR USE IN REFINERY AND PETRO-CHEMICAL APPLICATIONS



(57) Abstract: A fired heater unit is disclosed having at least one radiant heating section with each of the at least one radiant heating section having a heating element located therein. The unit includes a convection section operatively connected to the at least one radiant heating section, wherein the convection section having at least one vertically oriented convection tube. Each of the at least one convection tube being operatively connected to the at least one radiant heating section. Each of the at least one convection tube includes an inner tube having process fluid flowing therethrough, wherein the process fluid being heated by the at least one radiant heating section, and an outer tube extending along a predetermined portion of the inner tube, wherein the outer tube is spaced from the inner tube to form a flow path therebetween.

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