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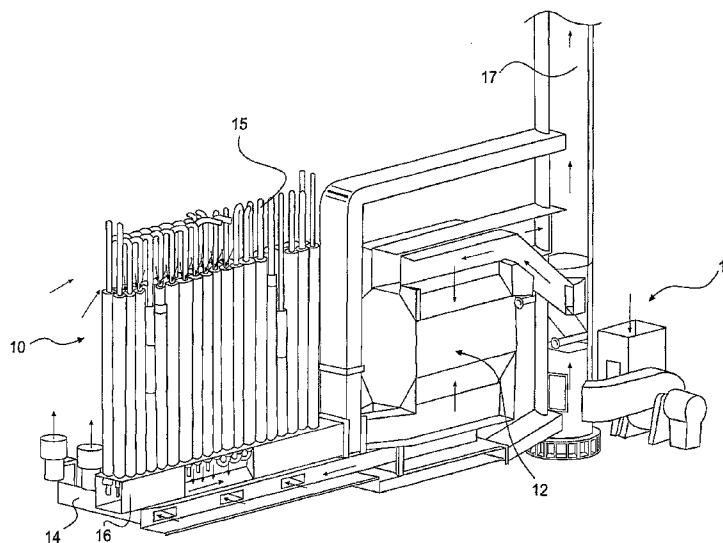
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[Continued on next page]

(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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