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- (54) **Title:** PROCESS AND REACTOR FOR GENERATING THERMAL ENERGY AND BASE CHEMICALS

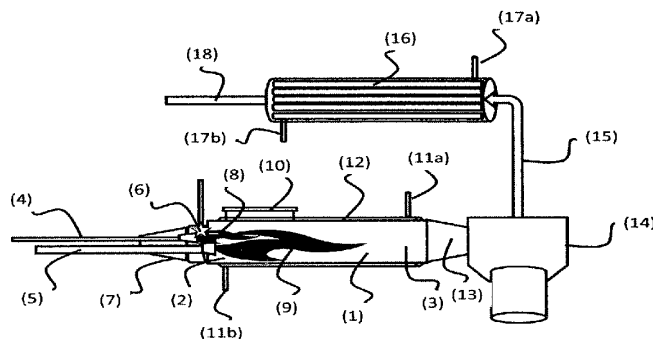


Figure 1

- (57) **Abstract:** Disclosed is a process for producing thermal energy and base chemicals and a reactor used for this process. The reactor contains a reaction space for oxidizing metal fuel with water or carbon dioxide and optionally other oxidants. The reaction space is connected at its outlet with a separation device for solids contained in the product gas leaving the reaction space. In the reaction space a first flame is generated which triggers the reaction of metallic fuel with oxidant to generate a second flame within the reaction space. The first flame is generated by using a fuel mixture which is introduced into the reaction space via one or more feed lines. At the end of this feed line(s) an ignition device acts on the fuel to ignite the first flame which in turn triggers the formation of the second flame. The thermal energy generated by the oxidation reaction is recovered by using one or more heat exchangers which may be placed at different locations of the reactor. With the reactor and the process of this invention hydrogen and/or carbon monoxide is generated from metal fuel and water or CO₂. When using water and carbon dioxide as oxidant a mixture of hydrogen and carbon monoxide is produced. These products can be used as base chemicals in various processes.

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