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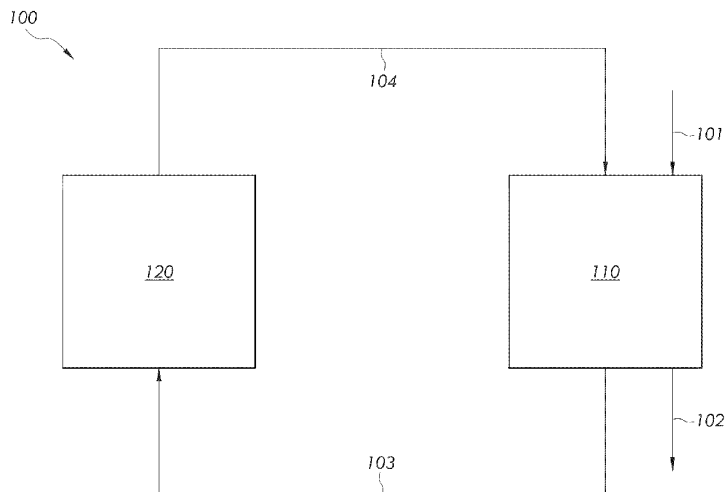


FIG. 1

(57) Abstract: According to one or more embodiments described herein, an oxygen carrier material may include a redox-active metal oxide and an alkali-including composition. The alkali-including composition may have the formula $\text{Na}_u\text{K}_v\text{Li}_w(\text{Si}_x\text{Al}_y\text{O}_z)_r$. In the formula the sum of u, v, and w may equal 1, the sum of x and y may equal 1, z may be greater than 1.5, and r may be from 0.02 to 20. A method of making an oxygen carrier material and a method of using an oxygen carrier material to produce olefinic compounds is also described herein.

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