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(54) **METHOD AND APPARATUS FOR VARYING ENERGY PER INSTRUCTION ACCORDING TO THE AMOUNT OF AVAILABLE PARALLELISM**

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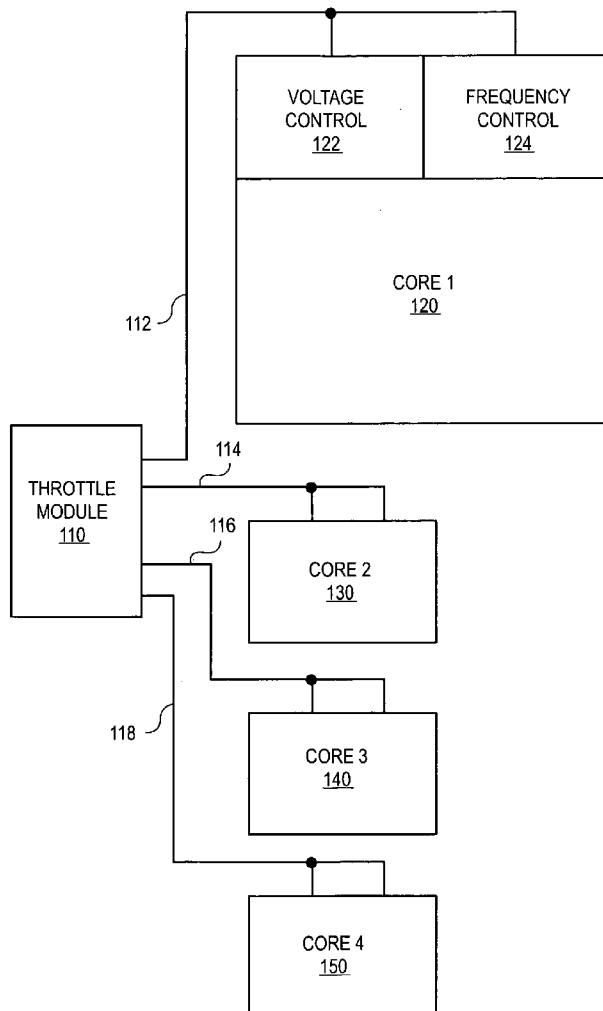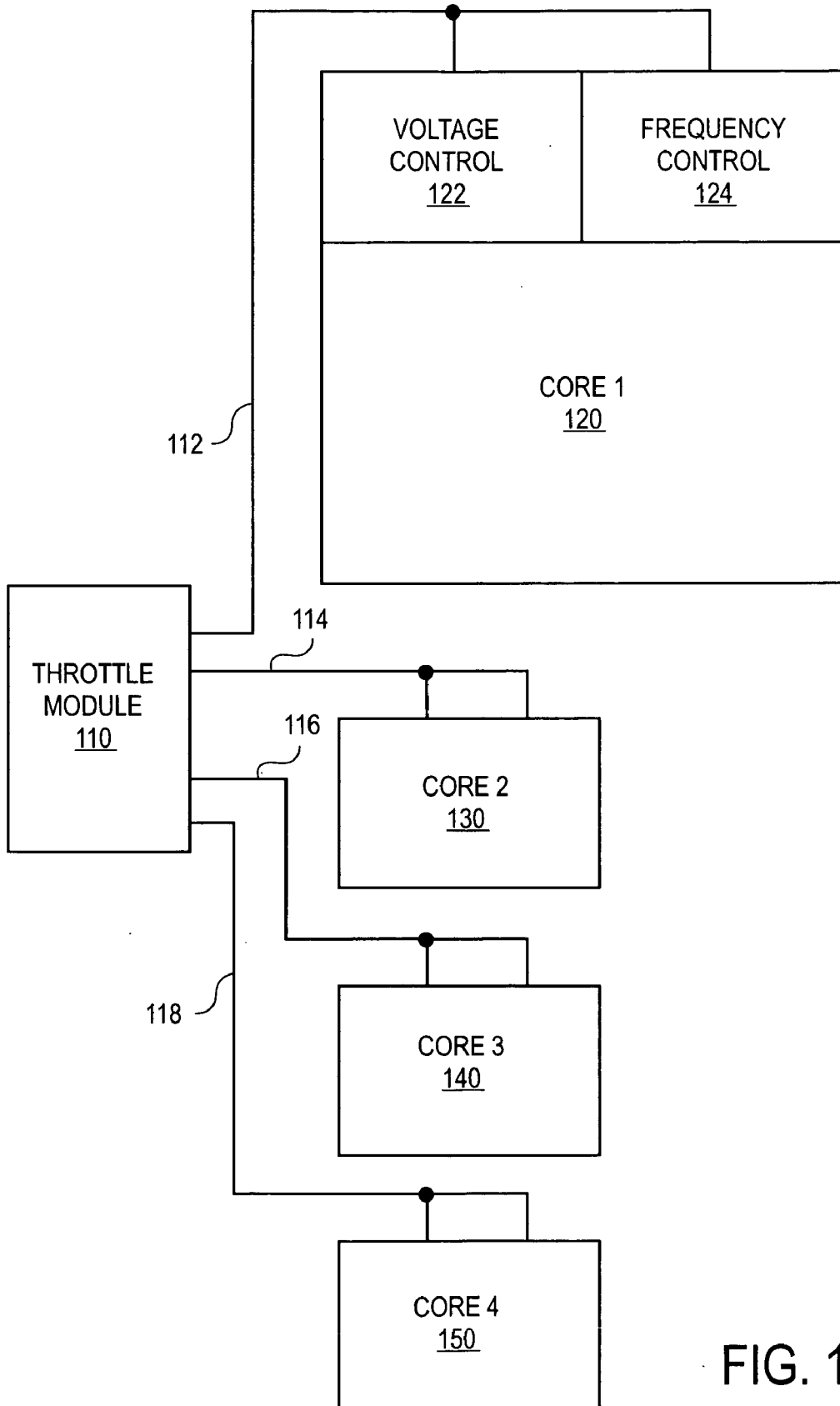
(57) **ABSTRACT**

A method and apparatus for changing the configuration of a multi-core processor is disclosed. In one embodiment, a throttle module (or throttle logic) may determine the amount of parallelism present in the currently-executing program, and change the execution of the threads of that program on the various cores. If the amount of parallelism is high, then the processor may be configured to run a larger amount of threads on cores configured to consume less power. If the amount of parallelism is low, then the processor may be configured to run a smaller amount of threads on cores configured for greater scalar performance.

VOLTAGE
CONTROL
122

FREQUENCY
CONTROL
124

CORE 1
120

112

THROTTLE
MODULE
110

114

116

CORE 2
130

118

CORE 3
140

CORE 4
150

FIG. 1

FIG. 2

FIG. 3

FIG. 4

DOCKET ALARM
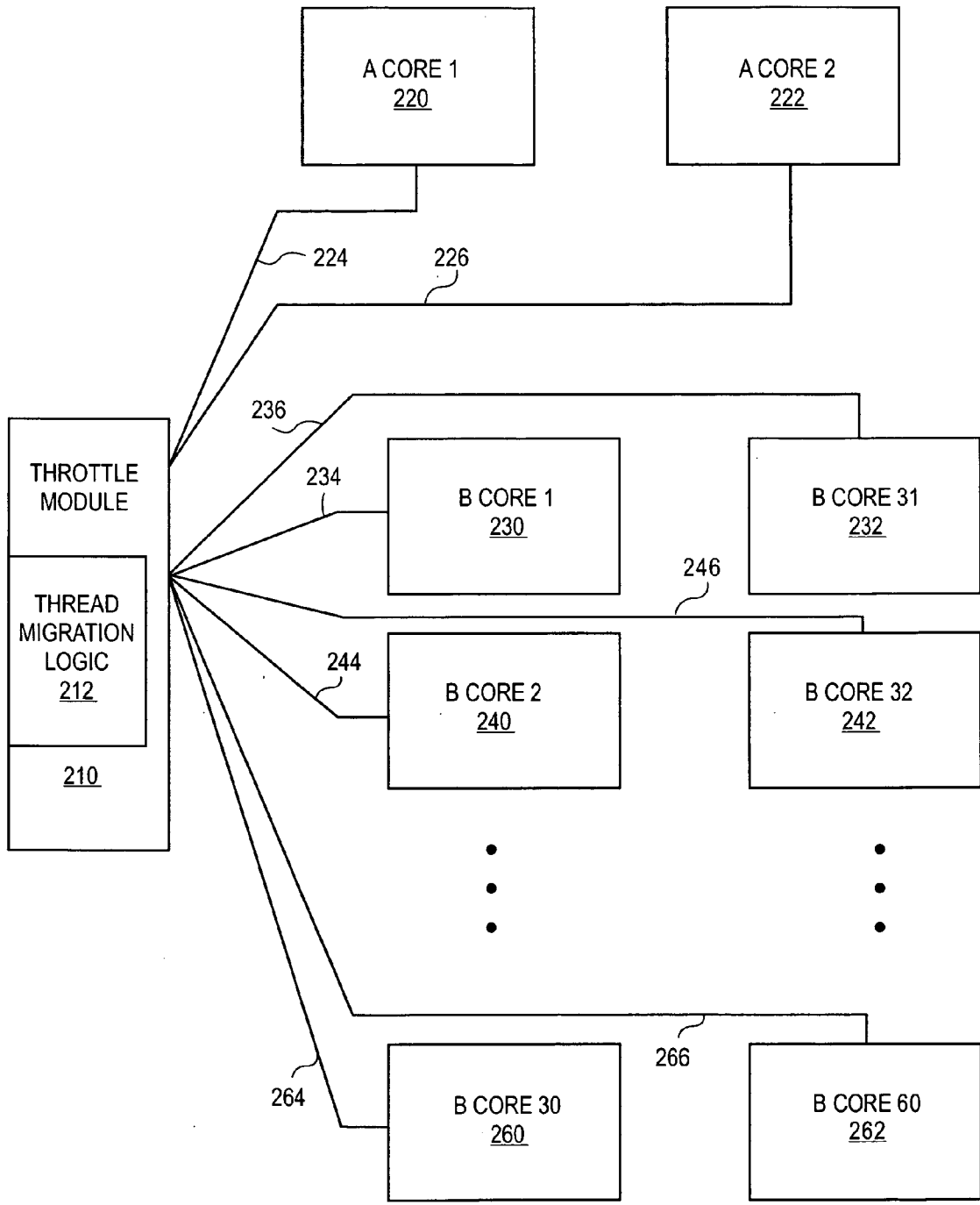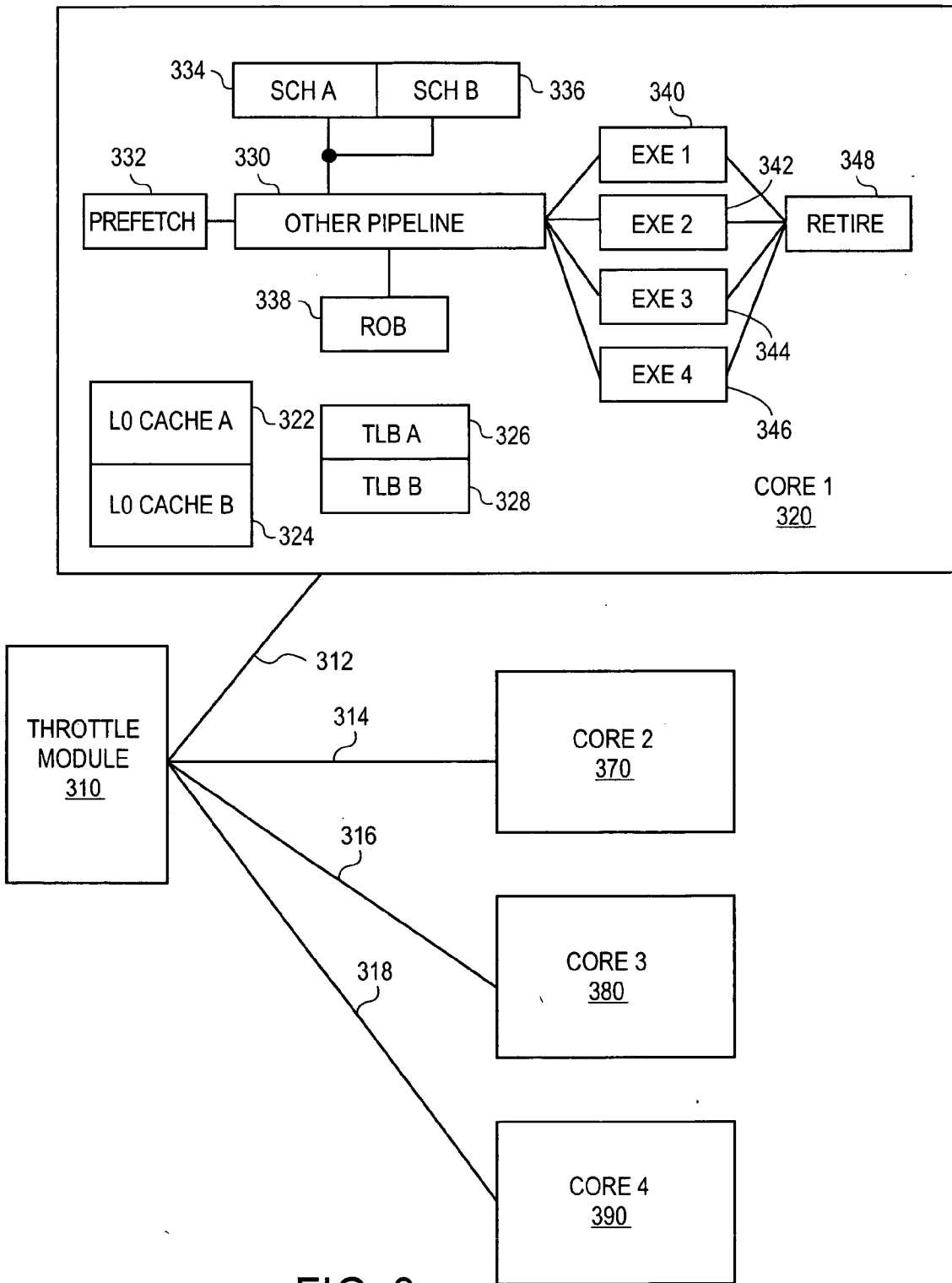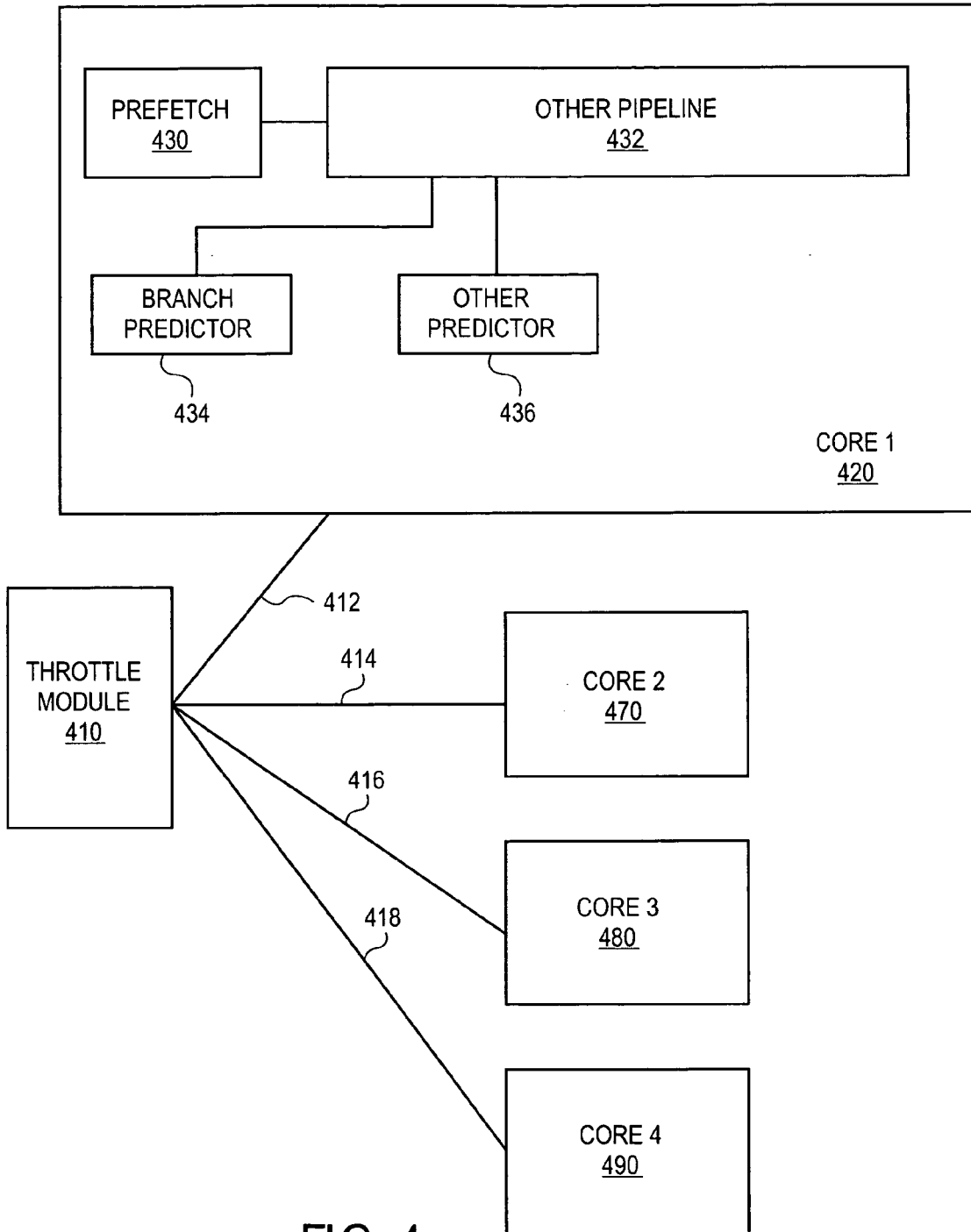
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