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**Pota et al.**

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(54) **ADDRESS MANIPULATION USING INDICES AND TAGS**

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***G06F 9/38*** (2018.01)
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(52) **U.S. Cl.**
CPC ..... ***G06F 9/3806*** (2013.01); ***G06F 9/30058*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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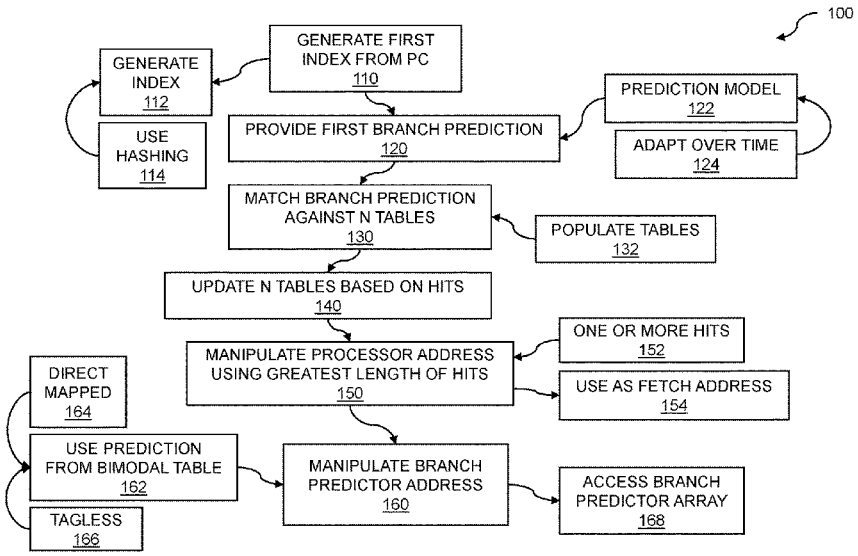
(57) **ABSTRACT**

Techniques are disclosed for address manipulation using indices and tags. A first index is generated from bits of a processor program counter, where the first index is used to access a branch predictor bimodal table. A first branch prediction is provided from the bimodal table, based on the first index. The first branch prediction is matched against N tables, where the tables contain prior branch histories, and where: the branch history in table T(N) is of greater length than the branch history of table T(N−1), and the branch history in table T(N−1) is of greater length than the branch history of table T(N−2). A processor address is manipulated using a greatest length of hits of branch prediction matches from the N tables, based on one or more hits occurring. The branch predictor address is manipulated using the first branch prediction from the bimodal table, based on zero hits occurring.

**21 Claims, 9 Drawing Sheets**