EXHIBIT C

(12) **United States Patent**   (10) **Patent No.:**   **US 6,725,402 B1**

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(54) **METHOD AND APPARATUS FOR FAULT DETECTION OF A PROCESSING TOOL AND CONTROL THEREOF USING AN ADVANCED PROCESS CONTROL (APC) FRAMEWORK**

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(52) **U.S. Cl.** **714/48**; 700/109; 700/95; 714/742

(58) **Field of Search** 714/4, 48, 742; 700/109, 139, 95; 438/14

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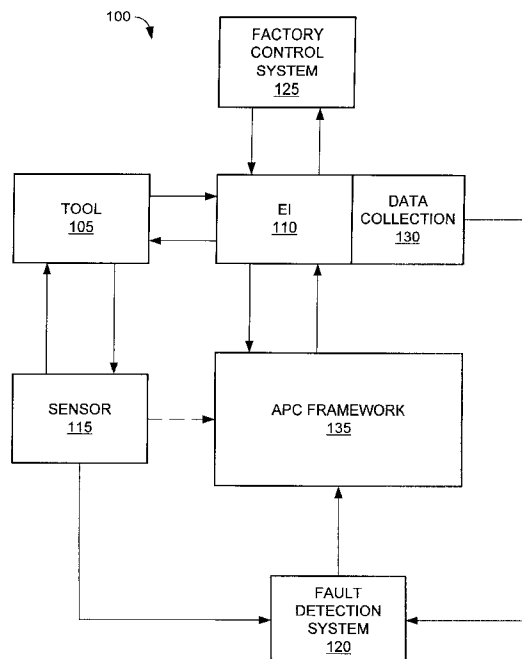* cited by examiner

Primary Examiner—Scott Baderman
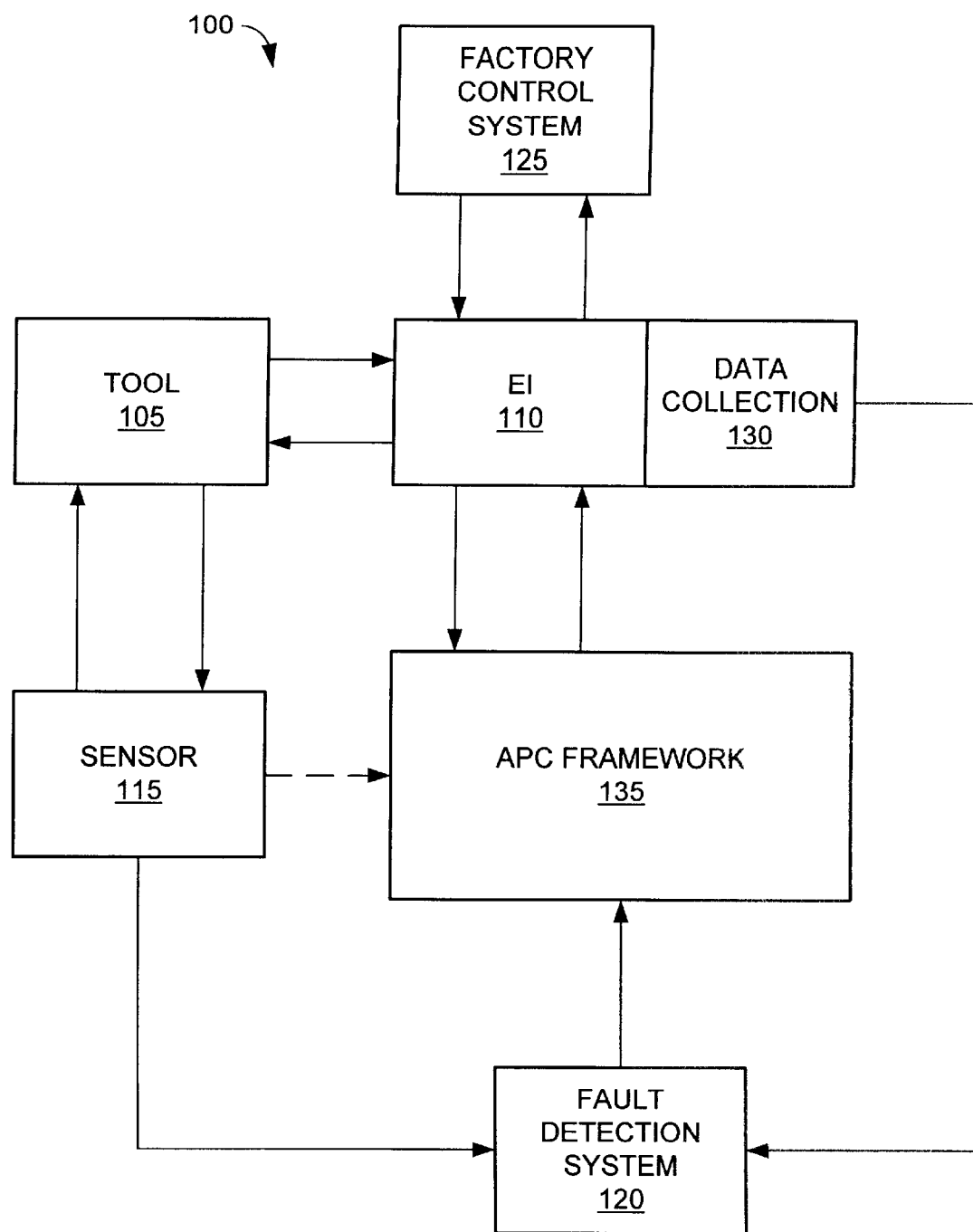*Assistant Examiner*—Anne L. Damiano
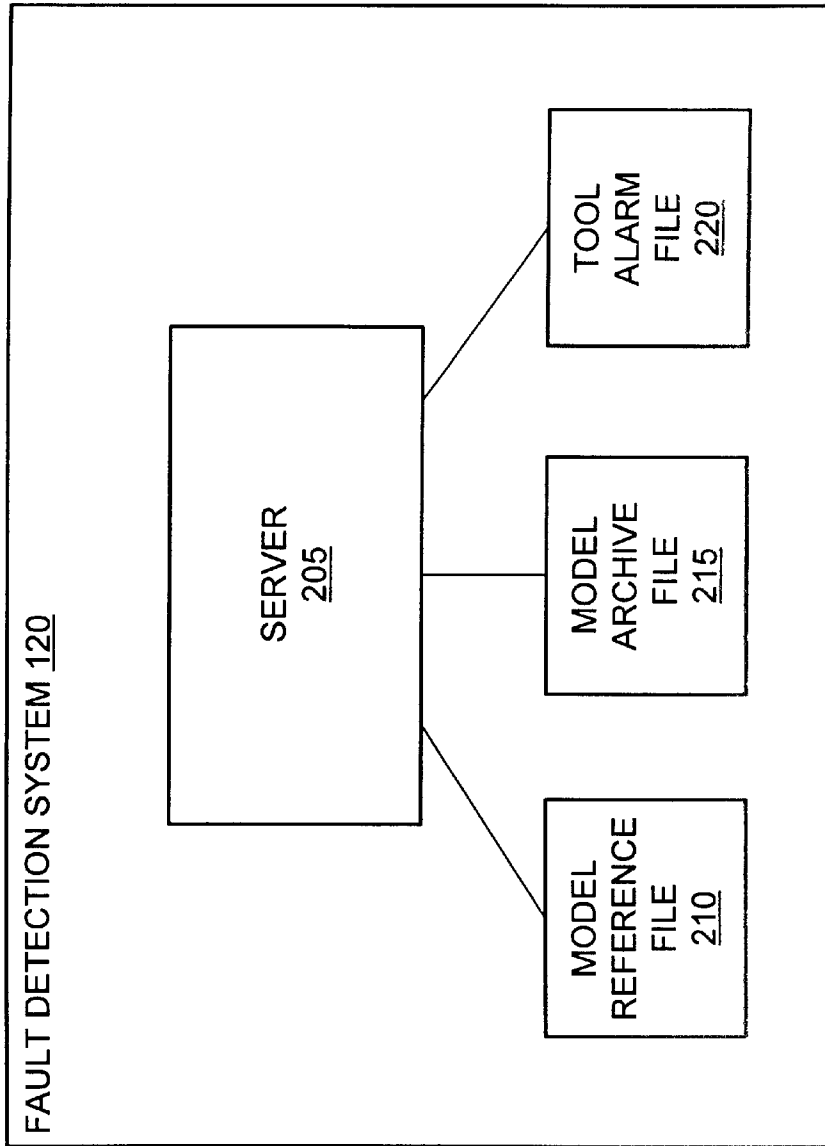(74) *Attorney, Agent, or Firm*—Williams, Morgan & Amerson, P.C.

(57) **ABSTRACT**

A method and apparatus for providing fault detection in an Advanced Process Control (APC) framework. A first interface receives operational state data of a processing tool related to the manufacture of a processing piece. The state data is sent from the first interface to a fault detection unit. A fault detection unit determines if a fault condition exists with the processing tool based upon the state data. A predetermined action is performed on the processing tool in response to the presence of a fault condition. In accordance with one embodiment, the predetermined action is to shutdown the processing tool so as to prevent further production of faulty wafers.

17 Claims, 5 Drawing Sheets

100

Figure 1

FAULT DETECTION SYSTEM 120

SERVER
205

MODEL
REFERENCE
FILE
210

MODEL
ARCHIVE
FILE
215

TOOL
ALARM
FILE
220

Figure 2

Figure 3

DOCKET ALARM
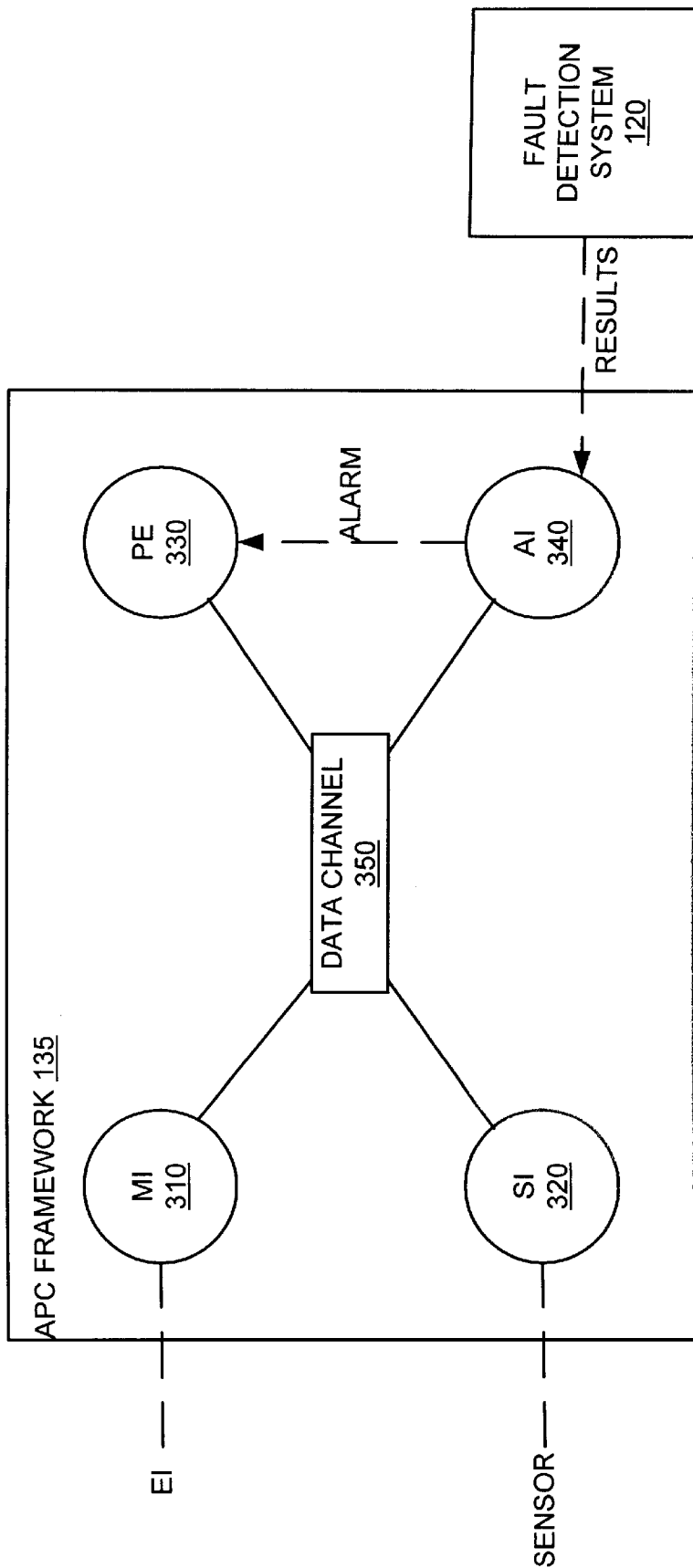
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