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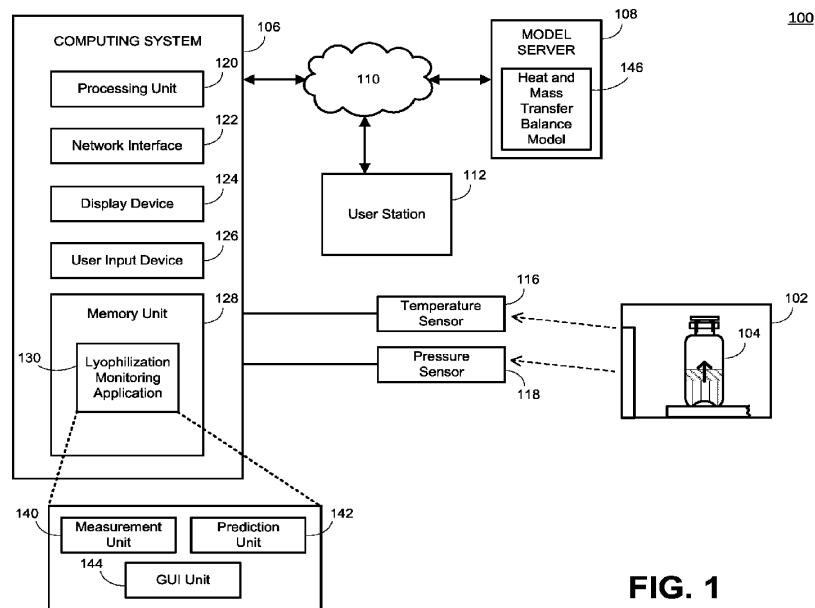


FIG. 1

(57) Abstract: A method of facilitating real-time monitoring of conditions within a vial during a lyophilization process occurring within a lyophilization chamber includes, for each of a plurality of time intervals during the lyophilization process, determining current values of temperature and pressure within the lyophilization chamber and, after each time interval, determining current values of one or more conditions within the vial. Determining the current values of the condition(s) within the vial includes applying those current values as inputs to a heat and mass transfer balance model and solving for a current value of a temperature within the vial (and possibly water removed from or remaining within the product). The method also includes causing a display device to display the current value(s) of the condition(s) within the vial to a user, and/or controlling the temperature and/or pressure within the lyophilization chamber based on the current value(s) of the condition(s) within the vial.

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