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Edwards et al.

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(54) **MEDICAMENT DELIVERY DEVICES WITH WIRELESS CONNECTIVITY AND EVENT DETECTION**

(58) **Field of Classification Search**
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(56) **References Cited**
U.S. PATENT DOCUMENTS
2,960,087 A 11/1960 Uytenbogaart
3,055,362 A 9/1962 Uytenbogaart
(Continued)

FOREIGN PATENT DOCUMENTS
AU 2004231230 6/2006
EP 1287840 A1 3/2003
(Continued)

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OTHER PUBLICATIONS
"Solutions for Medical Devices," 3M Brochure, ® 3M, (2006), 80-6201-3490-0, 8 pages.
(Continued)

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(57) **ABSTRACT**
A computer-implemented method includes establishing a communications link, via a short-range wireless protocol, between a mobile computing device and a medicament delivery device. A user input selecting a motion profile of the medicament delivery device is then received in response to an input prompt. A wireless signal is received from the medicament delivery device, the wireless signal associated with an actual motion profile of the medicament delivery device. A notification is produced to indicate a motion difference between the actual motion profile and the target motion profile. In some embodiments, the method optionally includes modifying the target motion profile based on the motion profile over a time period of at least one week, the notification indicating a motion difference between the motion profile and the modified target motion profile.

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G16H 20/17 (2018.01)
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20 Claims, 70 Drawing Sheets

