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(54) **DELIVERY DEVICE AND METHOD**

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(58) **Field of Classification Search**

None

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

605,436 A 6/1898 Kellogg

642,748 A 2/1900 Manners

(Continued)

FOREIGN PATENT DOCUMENTS

GB 240565 \* 10/2004 ..... A61M 15/08  
WO WO 96/22802 8/1996

(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 12/973,317, Djupestrand.

(Continued)

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(57) **ABSTRACT**

A nasal delivery device for and method of delivering substance to the middle meatus in a nasal cavity of a subject in the treatment of a condition, in particular an inflammatory or infectious condition, thereof, the delivery device comprising: a nosepiece unit (17) including a nosepiece (20) for fitting to a nostril of a subject and a nozzle (25) through which substance is in use delivered to the respective nasal cavity; and a delivery unit (29) for delivering substance through the nozzle of the nosepiece; wherein the delivery device is configured to provide for deposition of a significant fraction of the delivered dose on, around and in the vicinity of the middle meatus.

**13 Claims, 6 Drawing Sheets**

