

# EXHIBIT 2



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(12) **United States Patent**  
**Rinker et al.**

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 (45) **Date of Patent:** **Nov. 14, 2017**

(54) **PERMEABLE ELECTRIC THERMAL RESISTOR FOIL FOR VAPORIZING FLUIDS FROM SINGLE-USE MOUTHPIECES WITH VAPORIZER MEMBRANES**

(58) **Field of Classification Search**  
 CPC ..... A24F 47/00; A24F 47/008; H05B 3/26; H05B 2203/013

(Continued)

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 Neuchatel (CH)

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 854 days.

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(57) **ABSTRACT**

(65) **Prior Publication Data**  
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A vaporizer device for vaporizing substances is provided, containing active and/or aroma materials, including a mouthpiece with a fluid inlet and a fluid outlet, and including: a heating device with a thermal resistor being a metallic foil or a thin sheet configured as a dual coil and/or sinuous line with two ends and dimensions of the cross-section of a cigarette or a small cigar, wherein the interspaces of the dual coil and/or sinuous line allow fluid flow therethrough, contact tabs are connected to respective opposed ends of the dual coil and/or sinuous line and are not in direct contact with one another, and at least one permeable and wettable vaporizer membrane in large-area contact with the thermal resistor, wherein the thermal resistor and the at least one

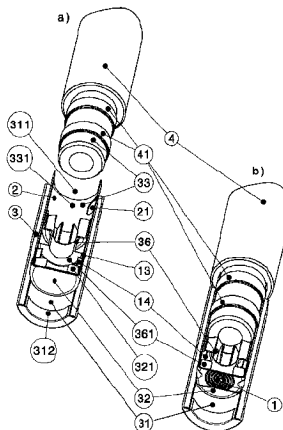
(Continued)

(30) **Foreign Application Priority Data**

Sep. 28, 2011 (EP) ..... 11183197

(51) **Int. Cl.**  
**A24F 47/00** (2006.01)  
**H05B 3/26** (2006.01)

(52) **U.S. Cl.**  
 CPC ..... **A24F 47/008** (2013.01); **H05B 3/26** (2013.01); **H05B 2203/013** (2013.01)



**US 9,814,265 B2**

Page 2

vaporizer membrane are arranged orthogonally or at an angle to the direction of the fluids passing through the mouthpiece.

**17 Claims, 2 Drawing Sheets**

(58) **Field of Classification Search**  
 USPC ..... 128/202.21, 17; 131/329; 338/294  
 See application file for complete search history.

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Fig. 1

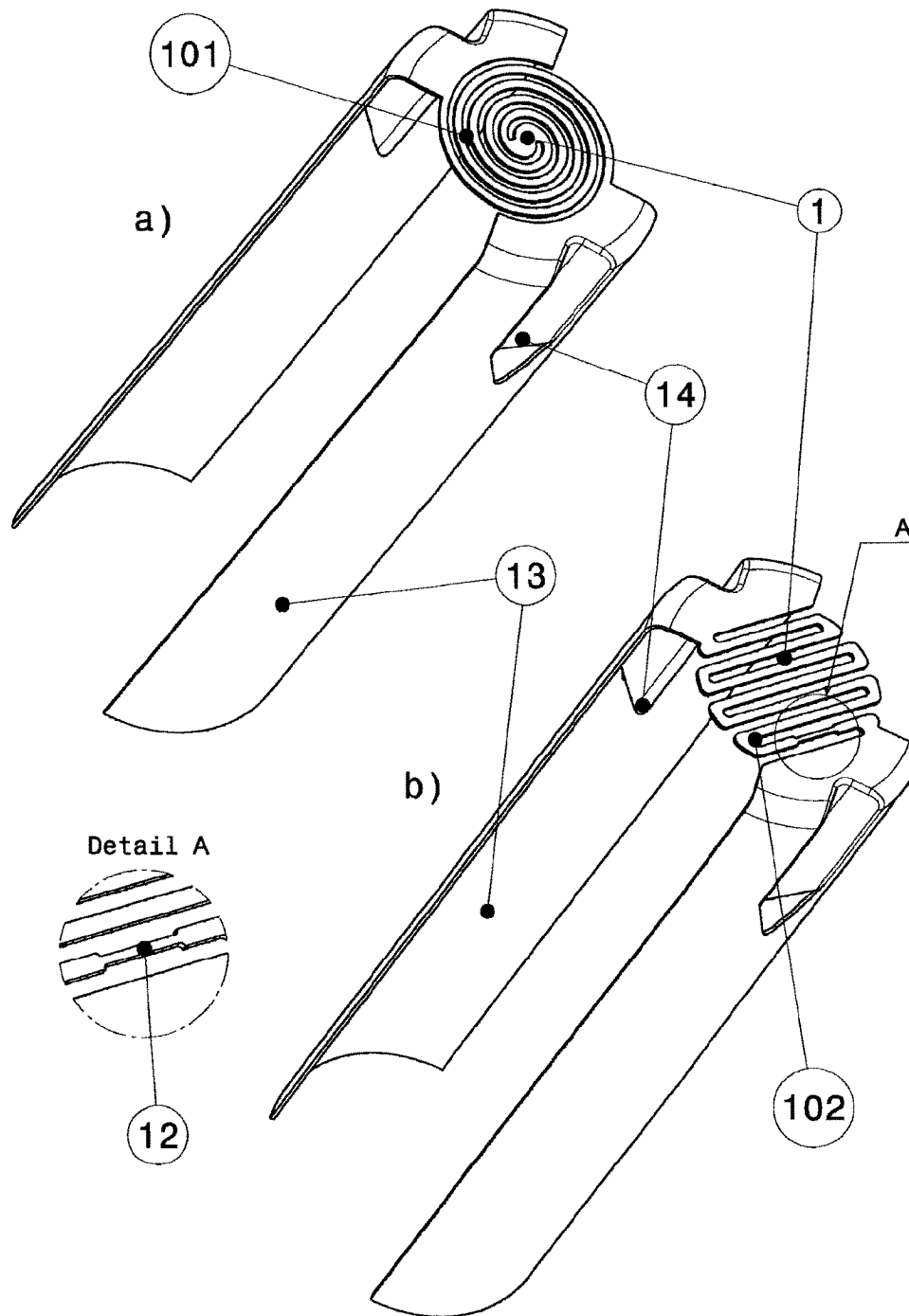
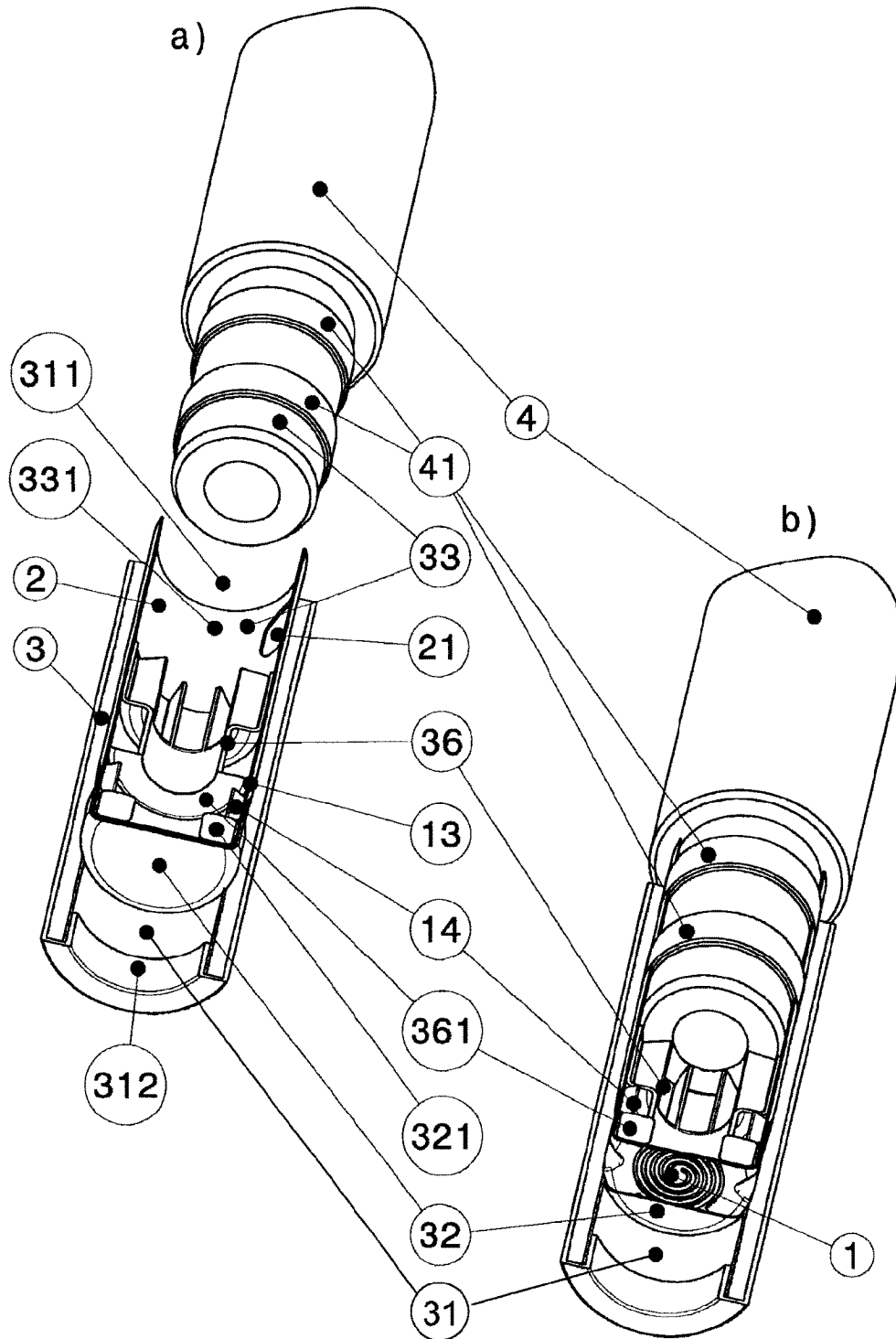


Fig. 2



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