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United States Patent [19]
Deevi et al.

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- [54] REINFORCED CARBON HEATER WITH DISCRETE HEATING ZONES
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- [73] Assignee: Philip Morris Incorporated, New York, N.Y.
- [21] Appl. No.: 931,997
- [22] Filed: Aug. 19, 1992
- [51] Int. Cl.⁵ A24F 47/00
- [52] U.S. Cl. 131/194; 131/329; 131/273
- [58] Field of Search 131/194, 195, 270, 271, 131/273, 329; 219/240, 543, 254; 392/386, 403, 404; 128/203.17, 203.27; 338/306-310, 225, 226, 332, 294
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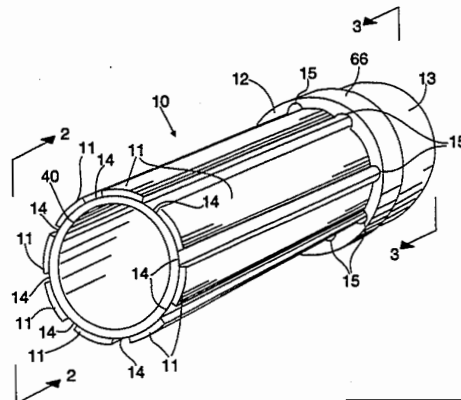
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Primary Examiner—Jennifer Bahr
Attorney, Agent, or Firm—Charles E. B. Glenn; James E. Schardt; Kevin B. Osborne

[57] ABSTRACT

A bladed tubular array for use as a heating element in an electrical smoking article, and a tobacco flavor element for such an article based thereon, are provided. The integral carbon heater preferably provides eight thermally and electrically discrete heating zones to provide an optimized heating zone when each blade is individually powered. Each blade has a desired resistance, to provide temperature preferably in the range of from about 300° C. to about 900° C., or higher. The relatively brittle carbon composite conductive blades are supported by a reinforcing tube of spiral-wound paperboard. A common ring of the same conductive material serves as a common electrical terminal for the blades, while the free end of each blade serves as the other electrical terminal of that blade.

62 Claims, 6 Drawing Sheets



RAI Strategic Holdings, Inc.
Exhibit 2038
Philip Morris Products, S.A. v. RAI Strategic Holdings, Inc.
IPR2020-00919

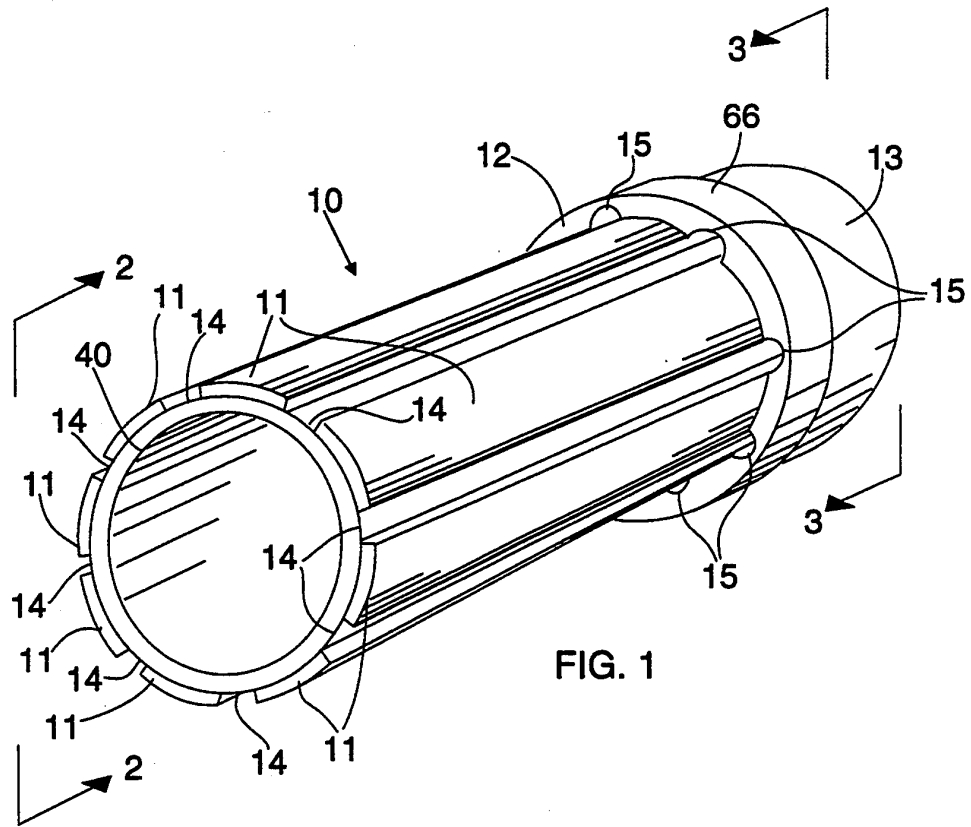


FIG. 1

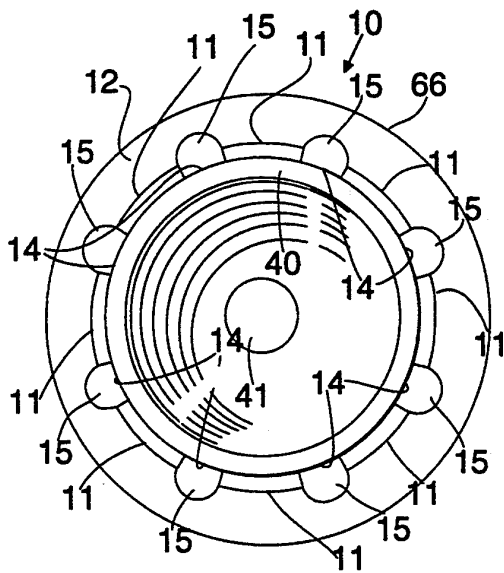


FIG. 2

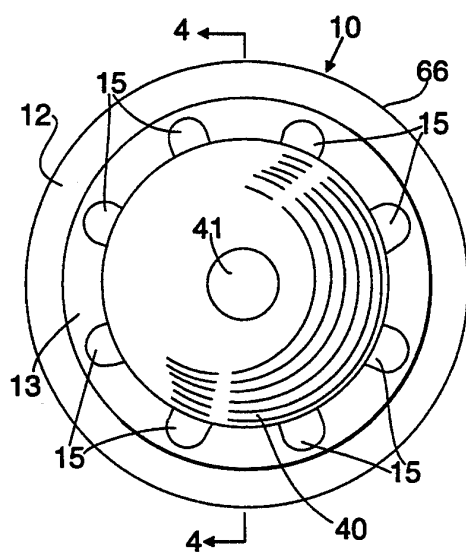
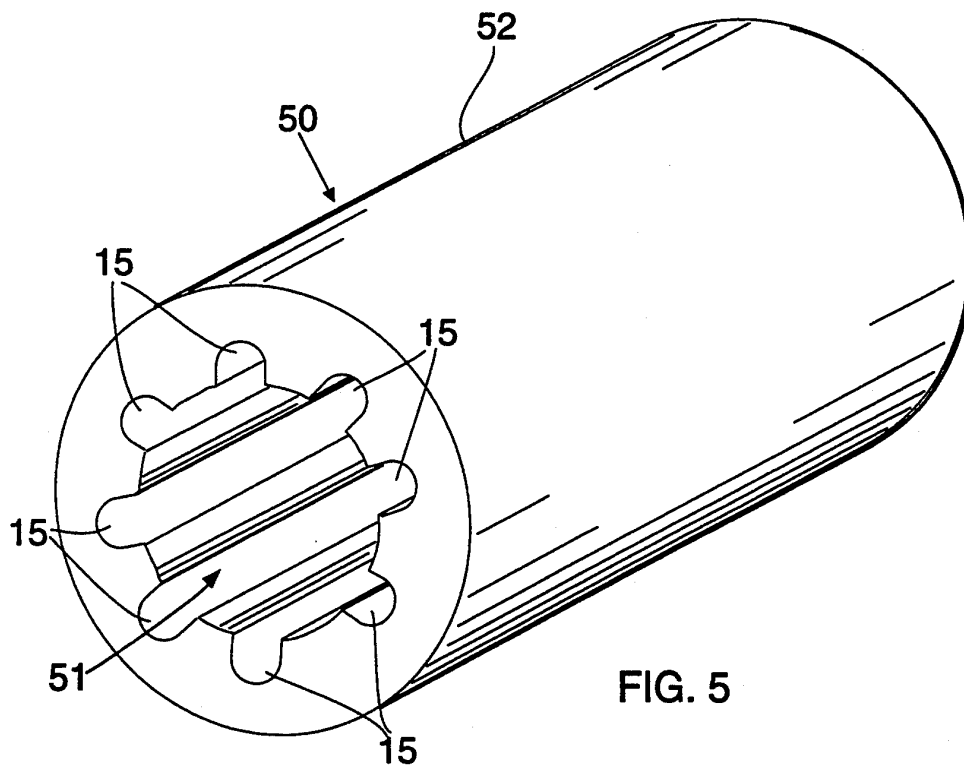
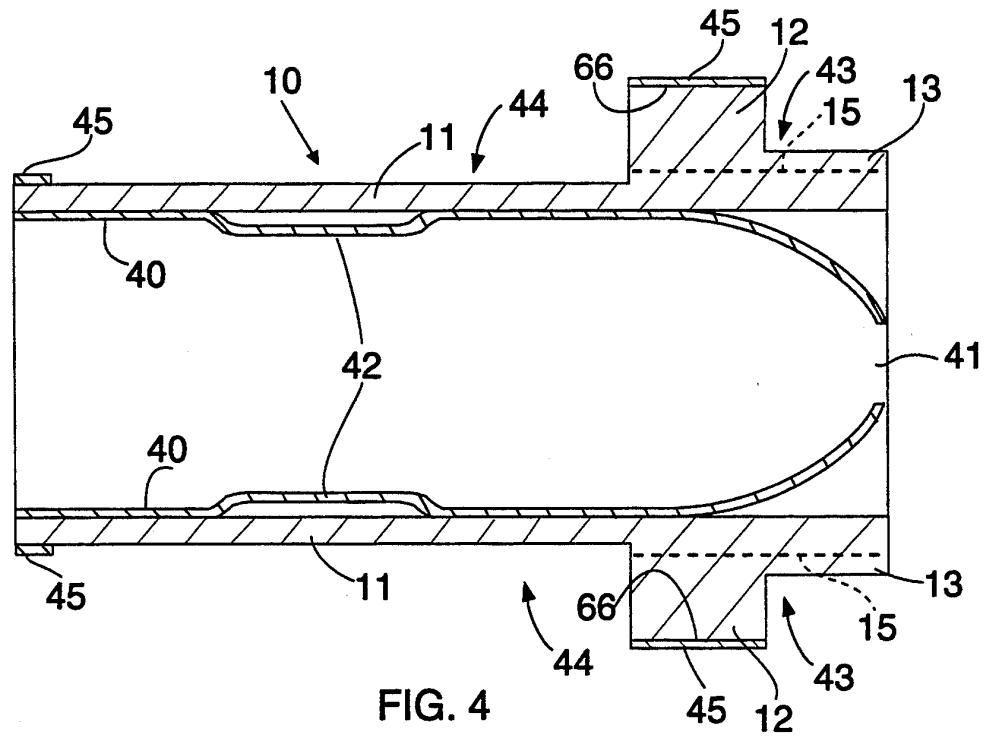


FIG. 3



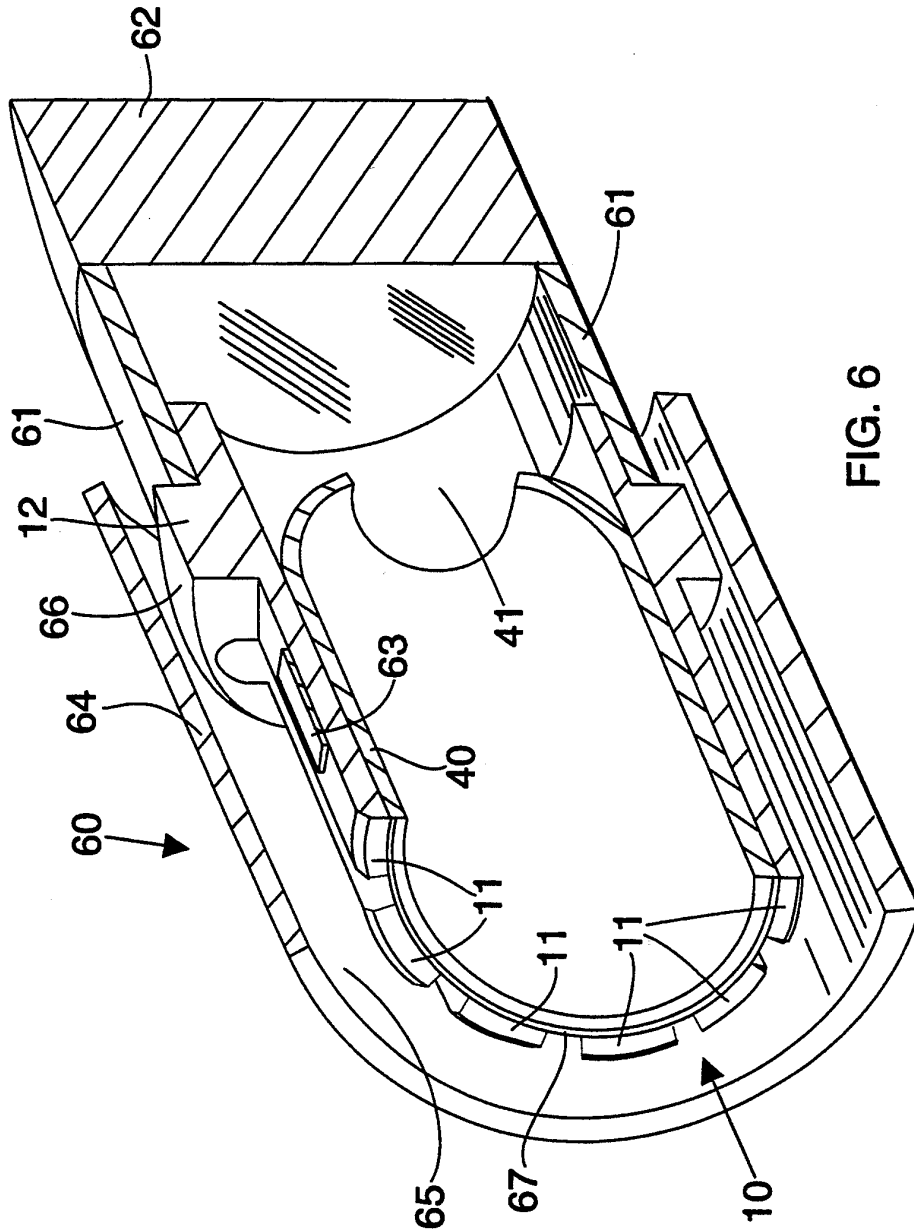


FIG. 6

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