



- [54] LIPOSUCTION APPARATUS AND ASSOCIATED METHOD
- [75] Inventors: Krishna Narayanan; Marc Liang, both of Pittsburgh, Pa.; Howard M. Alliger, Melville, N.Y.
- [73] Assignee: Misonix, Inc., Farmingdale, N.Y.
- [21] Appl. No.: 101,188
- [22] Filed: Aug. 3, 1993
- [51] Int. Cl.⁶ A61B 17/20
- [52] U.S. Cl. 604/22
- [58] Field of Search 604/22; 128/24; 606/169, 171

- 5,222,937 6/1993 Kagowa 604/22
- 5,263,957 11/1993 Davidson 604/22
- 5,279,547 1/1994 Costin 604/22
- 5,282,820 2/1994 Goodstein 604/22

Primary Examiner—C. Fred Rosenbaum
 Assistant Examiner—Manuel Mendez
 Attorney, Agent, or Firm—R. Neil Sudol; Henry Coleman

[56] References Cited

U.S. PATENT DOCUMENTS

- 4,040,414 8/1977 Suroff .
- 4,136,700 1/1979 Broadwin et al. .
- 4,223,676 9/1980 Wuchinich et al. .
- 4,634,419 6/1987 Kreizman et al. 604/22
- 4,735,605 4/1988 Swartz .
- 4,886,491 12/1989 Parisi et al. .
- 4,920,954 5/1990 Alliger et al. .
- 4,922,902 5/1990 Wuchinich et al. .
- 4,989,588 2/1991 Kubota et al. 604/22
- 5,026,387 6/1991 Thomas 604/22
- 5,069,664 12/1991 Guess et al. .
- 5,112,300 5/1992 Ureche 604/22
- 5,123,903 6/1992 Quaid et al. .
- 5,151,084 9/1992 Khok 604/22
- 5,151,085 9/1992 Sokuvi et al. 604/22
- 5,209,719 5/1993 Baruch et al. 604/22

[57] ABSTRACT

A method for removing adipose tissue uses an elongate rigid tube or probe member having a distal end and a proximal end and an axially extending lumen. An incision is formed in a skin surface of a patient, the tube being inserted through the incision into subcutaneous adipose tissues of the patient. Upon insertion of the tube through the incision, an ultrasonic pressure wave is generated at the proximal end of the tube, the waveform being transmitted through the tube to establish a standing wave therein. The standing ultrasonic wave in the insertion tube produces cavitation bubbles at the distal end of the tube, the bubbles causing liquefaction of adipose tissues of the patient at a surgical site located distally of the distal end of the insertion tube. Suction is applied to the lumen of the tube, thereby aspirating the liquefied adipose tissues from the surgical site through the lumen. During the entire procedure, the distal end of the tube and the adipose tissues at the surgical site are maintained at approximately body temperature.

29 Claims, 2 Drawing Sheets

