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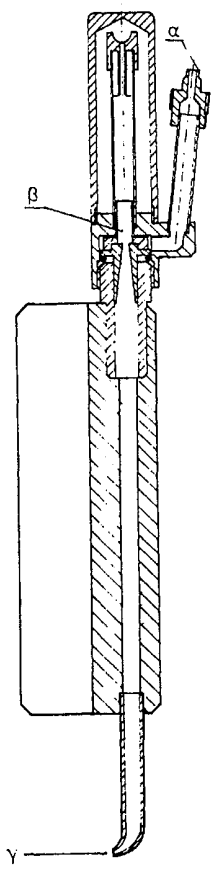
(54) Title: TISSUE COOLING SYSTEM FOR USE WITH LASER PROBES

(57) Abstract

Probe with area cooling system which you can be operated with different kind of lasers. The tissue, where the laser beam is applied, can be cooled continuously during the laser application, which gives many advantages in almost any kind of laser operation. Moreover this specific system is cooling without using any cooling liquid or electronic ways but only air pressure 6–8 atmospheres.



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TISSUE COOLING SYSTEM FOR USE WITH LASER PROBES

This invention concerns to a tissue cooling system with very low temperature output air, where can operate every kind of lasers with. For example: CO2, Alexandrite, ruby, dye, Nd: YAG for various operations as peeling and depilation. The air that the nozzle of the probe takes out, has low temperature, almost O C (down to 0 –20 C is possible) and it goes where exactly the laser beam is applied. As a result of this, freezing the tissue before-during the radiation and after it, is accomplished. Moreover, freeze is produced using only air pressure 6-8 atmospheres, and without any other means. liquid or electronic.

There are many cooling systems for laser operations but they use different methods, such as spray with cooling liquid before the radiation or frizzed transparent material where the laser beam going through these when and if it is possible.

The system can be connected in every laser handpiece. It freezes the tissue well and for long periods (as long as the user wants), without affecting the laser beam in any way. Spray cooling systems can freeze the tissue momentary and only before the laser beam application. Cooling systems that use frizzed transparent materials are heavily affecting laser beam by inserting high losses because they are placed on beam path. Additionally these "transparent materials" are not transparent to all wavelengths.

This system uses only air pressure up to 8 atmospheres. Inside, the air circulated very quickly and getting warm. The hot air comes out from the back of the system and a part of the air returns to the tightest hole, in low temperature and that is the air we use.

Indicative description of the invention in the drawings 1, 2 and 3. As you can see in plan 1 the section α is the main probe, the section β is the entrance of the air, the section γ is the place where the cold air is produced and the section δ is the exit of the cold air.

In plan 2 you can see the trace of the system and especially in part b, where the cold air exits. Plan 3 is a vertical view and the probe of the laser is being situated to the spot a.

For every laser has different diameter or shape.

Diameters and shapes are varying according to the different laser handpieces that are used.

CLAIMS

1. Probe with area cooling system in which you can operate with any kind of laser. This system is frizzing the tissue at user selected temperature for any laser operation. (In this probe you can put any laser probe from any company).

2. The cooling system uses only compressed air from a simple compressor without using other ways such as cooling liquid. electronic ways, or anything else.

figure 1

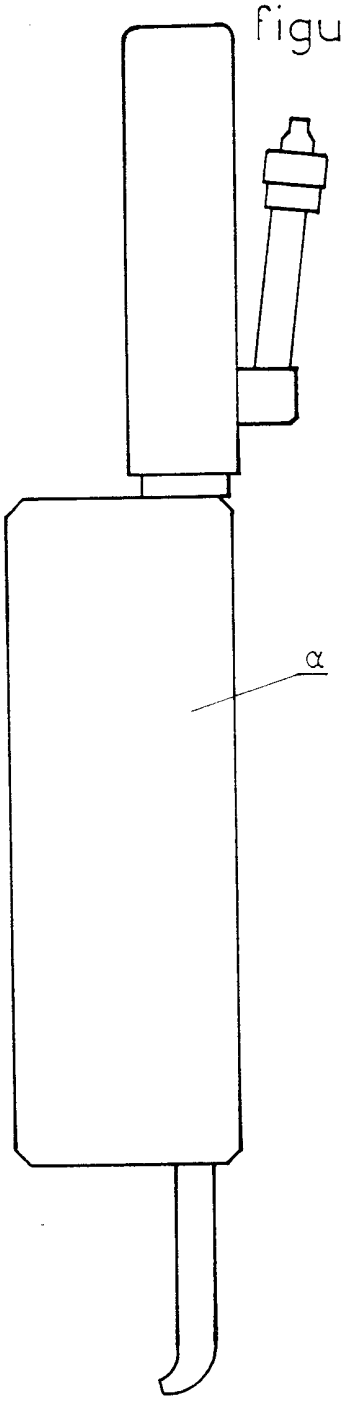


figure 2

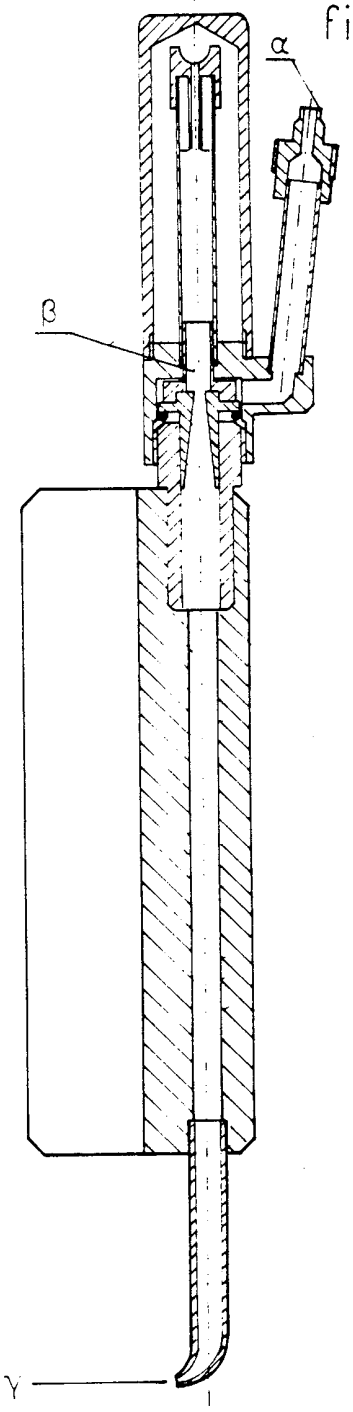
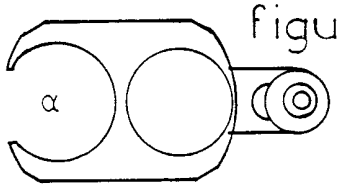


figure 3



INTERNATIONAL SEARCH REPORT

Inte .onal Application No
PCT/GR 99/00039

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61F7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 344 418 A (GHAFFARI SHAHRIAR) 6 September 1994 (1994-09-06) column 7, line 39 -column 8, line 9; figure 7A	1,2
X	US 5 077 980 A (WEBER DIETER) 7 January 1992 (1992-01-07) column 2, line 50 - line 61; figure 1	1,2
X	US 5 630 811 A (MILLER IAIN D) 20 May 1997 (1997-05-20) column 9, line 41 - line 60 column 10, line 56 - line 58; figure 6	1,2

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25 January 2000	01/02/2000

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1

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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