

File

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

APPEALS

JAN 25 1996

PATENT OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MINORU SAITOH,
AKIRA UESUGI,
and TAKAHIRO UCHIDA

Appeal No. 95-1518
Application 08/004,581

ON BRIEF

Before CARDILLO, BARRETT, and FLEMING, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 7, 8, and 10. Claims 9 and 11, the remaining claims in the application, are allowed.

¹ Application for patent filed January 14, 1993, entitled "Laser Apparatus and Accessible, Compact Cooling System Thereof Having Interchangeable Flow Restricting Members."

Appeal No. 95-1518
Application 08/004,581

The invention is directed to a laser system arrangement and a laser cooling system. The laser system arrangement of claims 7 and 8 calls for the laser power supply and cooling system to be mounted side by side in a horizontal direction in a lower unit and for an external terminal of the power supply to be mounted at the front of the lower unit for ease of maintenance. The cooling system of claims 10 and 8 provides an ion exchanger and filter submerged in the water storage tank.

Claim 7 and 10 are reproduced below.

7. A laser system comprising:

an upper unit including a laser oscillator;

a lower unit integral with the upper unit, said lower unit including a compartment, power supply means for supplying electric power to said laser oscillator and cooling means for supplying cooling water to said laser oscillator disposed in said compartment side by side as spaced horizontally from one another, and a front panel mounted at the front of said compartment, said front panel being manually openable and closable to expose and cover the power supply means and the cooling means disposed in said compartment;

said power supply means including an external terminal disposed at the front of said lower unit behind said front panel, and

said cooling means including an external port of a pipe system disposed at the front of said lower unit behind said front panel.

Appeal No. 95-1518
Application 08/004,581

10. A laser cooling system for cooling a laser oscillator, said system comprising:

an ion exchanger which deionizes cooling water;

a filter which removes undesired materials from the cooling water;

a storage tank which stores the cooling water to be supplied to a laser oscillator;

pipng configured to form a circuit with the laser oscillator and said storage tank;

a pump which circulates the cooling water through said circuit; and

said ion exchanger and said filter being located in said storage tank, said ion exchanger having an inlet connected to said piping and through which the cooling water enters so as to form an inlet of said tank, and said filter having an outlet from which the cooling water flows out of said tank to said piping so as to form an outlet of said tank, and said ion exchanger having an outlet located in said tank such that cooling water flowing therefrom passes to said filter located in said tank.

THE REFERENCE

The examiner relies on the following U.S. patent:

Daly et al. (Daly) 4,507,789 March 26, 1985

THE REJECTION

Claims 7, 8, and 10 stand rejected under 35 U.S.C. § 103 as unpatentable over Daly.

Appeal No. 95-1518
Application 08/004,581

OPINION

We sustain the rejection of claim 7 and reverse the rejection of claims 8 and 10.

Claim 7

Appellants argue the following differences between claim 7 and Daly (Brief, pages 4-6): (1) Daly shows a power supply 16 mounted on top of the cooling system 18 in a mobile cabinet 14, whereas claim 7 calls for a power supply means and cooling means "disposed in said compartment side by side as spaced horizontally from one another"; and (2) Daly does "not disclose the power supply as including an external terminal and the cooling means as including an external port both disposed at a front portion of the unit behind the front panel of the same" (Brief, page 4). Other differences and findings are not challenged and are not considered. 37 CFR § 1.192(c)(6)(iv) (1994) (the arguments must discuss all errors relied on). For example, appellants do not dispute the examiner's finding that an external terminal and an external port would be inherent in the structure of Daly. Nor do appellants argue that the laser head unit 12 is not integral with the cabinet 14 or that Daly does not have a single front panel. Thus, the only issues are the obviousness of the two differences enumerated above.

Appeal No. 95-1518
Application 08/004,581

The examiner relies (Final Rejection, Paper No. 7, page 3; Examiner's Answer, page 4) on the following teaching of Daly (column 6, lines 44-51) (emphasis added):

The power supply drawer may pull out for easy access. The power supply is only about 75 pounds as compared to the laser of the prior art weighing approximately 200 pounds. The cooler filter and deionizer are within easy reach for routine maintenance.

The examiner states (Final Rejection, Paper No. 7, page 3):

However, in the device of Daly et al, the power supply and the cooling system are within reach for routine maintenance. This would suggest to the artisan to provide the power supply and the cooling system at any desired position. Thus, it would have been an obvious matter of design choice to the artisan to provide the power supply and the cooling system disposed in the cabinet side by side as spaced horizontally from one another and provide the external terminal and the external port in front of the cabinet for the purpose of easy access for maintenance.

We agree with the examiner's finding that Daly's disclosure of designing the system for "easy access" to the power supply and putting the filter and deionizer "within easy reach for routine maintenance" expressly teaches one skilled in the art to design a laser system for easy access for use and maintenance of at least the frequently used major components thereof. Such teaching would manifestly apply to locating power supply external terminals and cooling system external ports, which require access for use and maintenance. Access and maintenance are the reasons for appellants' claimed

Appeal No. 95-1518
Application 08/004,581

location of the external terminals and external ports
(specification, pages 15-16).

The power supply in Daly is intended to be accessed from the front as indicated by the handles in figure 1 and the statement that "[t]he power supply drawer may pull out for easy access" (column 6, lines 46-47). The cooling system in Daly is also intended to be accessed from the front, as indicated by the handles in figure 1, although it is not known whether the cooling system is mounted to pull out like the power supply or is just covered by the front panel. The power supply and cooling system are accessed from the front because the "power supply/cooler unit 14 will fit under a standard 30 inch high work bench" (column 6, lines 44-45). We conclude that the front access to the power supply and cooling system reasonably suggests that external terminals and external ports should be "disposed at the front of said lower unit", as claimed, for easy access for use and maintenance. We note that the power supply 16 of Daly has an "external terminal" in the form of a socket, shown as a circle with two vertical bars in figure 1, perhaps for plugging in test equipment, which is an express teaching of locating an external terminal "at the front."

Even if Daly did not suggest a front access, we feel that one skilled in the art faced with the problem of gaining access to external terminals and external ports in a heavy cabinet

Appeal No. 95-1518
Application 08/004,581

containing sensitive equipment would have found locating the elements needing access at the front of the cabinet to be an obvious solution. General guidelines for the design of electronic cabinets suggest the common sense approach of putting frequently used items at the front. See Paul Horowitz and Winfield Hill, The Art of Electronics (Cambridge University Press 1980), pages 548-49 ("In general, you use the front panel for indicators, meters, displays, etc., as well as controls and frequently used connectors. It is common to put seldom-used adjustments and connectors that don't require frequent access on the rear panel, along with large connectors, line cord, fuses, etc.") (copy attached).

Appellants argue (Brief, page 5):

However, Appellants' [sic] respectfully submit that the fact that the power supply system 16 needs to be pulled out via a drawer would suggest that the external terminal of the power supply is located somewhere toward the rear of the system and needs to be accessed by pulling the power supply system out the apparatus.

We disagree. The power supply is designed for easy access and maintenance from the front because this is the direction the drawer pulls out. This implies that components, such as external terminals, would be located toward the front rather than inconveniently located toward the back.

Appellants further argue (Brief, page 5):

Further, the vertical juxtaposition of the cooling system and power supply system in Daly et al. would prohibit cables of an external power source and piping of an

Appeal No. 95-1518
Application 08/004,581

external water supply system from being capable of being connected to both the power supply system and cooling system at the front of the apparatus.

This argument is not understood and is not persuasive. Since the cooling system is on the bottom in Daly's and appellants' system, clearly nothing prohibits attachment at the front of the apparatus in Daly. Further, since the power supply is separate and distinct from the cooling system in Daly's and appellants' system, it is not understood what prohibits a connection at the front of the apparatus in Daly.

Daly does not suggest placing the power supply and the cooling system horizontally side by side. However, no reason, advantage, difference in function, or unexpected result is disclosed or argued for this particular configuration as opposed to the vertical disposition in Daly. Such a difference in configuration which does not produce any argued difference in function falls within the realm of a "design choice." See In re Chu, 66 F.3d 292, 298-99, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995), and the cases cited therein for a discussion of "design choice." We conclude that the horizontal configuration is one of a limited number of obvious alternative configurations that one skilled in the art would use in packaging. The analogy we use is the refrigerator/freezer configuration. The freezer can be located on the top or bottom, or on either side, of the refrigerator compartment.

Appeal No. 95-1518
Application 08/004,581

Those of ordinary skill in the art must be presumed to know something about the art apart from what the references expressly disclose. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). Thus, one skilled in the art would be aware of simple configuration variations without an express teaching in the reference.

Claims 8 and 10

Daly, figure 12, discloses a cooling circuit having a heat exchanger/reservoir 72, a particle filter 74, and a deionizing filter 76. The particle filter 74 and deionizing filter 76 are mounted in the piping outside the reservoir as in the admitted prior art of appellants' figure 12. Daly states (column 4, lines 62-64):

To reduce costs, the heat exchanger is immersed in the reservoir and is provided by helically wound or spirally wound copper tubing 82.

The examiner's position is (Examiner's Answer, pages 9-10):

Daly et al reference clearly teaches that providing the heat exchanger in the reservoir (water tank) would save space and reduce the manufacturing cost of the laser system. Thus, the artisan certainly would have realized to apply parallel teaching to any other elements (i.e. providing filter in the storage water tank) in order to conserve the space and reduce the manufacturing cost of the laser system.

We do not agree that locating the heat exchanger in the reservoir of Daly would have motivated one skilled in the art

Appeal No. 95-1518
Application 08/004,581

to place any component in the reservoir because heat exchangers are commonly located in tanks, whereas there is no evidence that this is true with filters. Daly shows the cooling water split by the pump 70 so that only a fraction of the cooling water passes through the deionizing filter 76 as with the prior art of appellants' figure 12. The claimed mounting of the ion exchanger to the inlet inside the storage tank ensures that all cooling water is circulated through the ion exchanger "thus improving the efficiency of deionizing" (specification, page 20, lines 13-14). Thus, a difference in function is achieved by relocating the filters, in addition to the argued down-sizing of the apparatus and reduction of manufacturing cost, and there is no suggestion of modifying Daly to produce this difference in function. For these reasons, we conclude that the examiner has failed to establish a prima facie case of obviousness with respect to claims 8 and 10 and reverse the rejection of these claims.

Appeal No: 95-1518
Application 08/004,581

WENDEROTH, LIND & PONACK
Southern Building, Suite 700
805 15th Street, N.W.
Washington, DC 20005