

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte SHUNSUKE BAN, TAKAO MAEDA, HIROSHI YOSHINO  
and TSUTOMU OOKA

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Appeal No. 96-4152  
Application 08/177,391<sup>1</sup>

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ON BRIEF

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Before COHEN, FRANKFORT and STAAB, Administrative Patent Judges.

STAAB, Administrative Patent Judge.

DECISION ON APPEAL

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<sup>1</sup> Application for patent filed January 5, 1994.

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Application 08/177,391

This is a decision on an appeal from the examiner's final rejection of claims 11-18, all the claim in the application.

Appellants' invention pertains to a particulate trap for collecting and removing particulates such as carbon contained in exhaust gas discharged from a diesel engine. Independent claim 11, a copy of which is found in an appendix to appellants' brief, is illustrative of the appealed subject matter.

The references of record relied upon by the examiner in support of rejections under 35 U.S.C. § 103 are:

Davis	2,220,641	Nov. 5, 1940
Roeser et al	3,892,536	Jul. 1, 1975
Bly et al	4,276,066	Jun. 30, 1981
Hammond, Jr. et al	4,390,355	Jun. 28, 1983
Ishida et al	4,548,625	Oct. 22, 1985
Stanton	4,629,483	Dec. 16, 1986
Stobbe	5,195,319	Mar. 23, 1993
Bloom et al	5,258,164	Nov. 2, 1993

Claims 11 to 18 stand rejected under 35 U.S.C. § 112, second paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter

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which appellant regards [sic, appellants regard] as the invention" (answer, page 3).

Claims 11 and 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bloom in view of Ishida and Davis, and further in view of either Bly or Stobbe.

Claims 13 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bloom in view of Ishida, Davis, and either Bly or Stobbe as applied in the rejection of claims 11 and 12, and further in view of Hammond.

Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over Bloom in view of Ishida, Davis, and either Bly or Stobbe as applied in the rejection of claims 11 and 12, and further in view of Stanton.

Claims 16 to 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bloom in view of Roeser, and further in view of either Bly or Stobbe.

The rejections are explained in the examiner's answer (Paper No. 13, mailed February 3, 1996).

The opposing viewpoints of appellants are set forth in the brief (Paper No. 12, filed November 18, 1994) and the reply brief (Paper No. 14, filed April 2, 1996).

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*The § 112, second paragraph, rejection*

The basis for the examiner's rejection of the appealed claims under 35 U.S.C. § 112, second paragraph, is found on page 3 of the answer and reads as follows:<sup>2</sup>

In claim 11, line 11 it is unclear as to what structural limitation is implied by "at opposite sides thereof" and should be deleted. See claim 16 likewise.

In claim 18, lines 4 and 5 "holes" lacks positive antecedent basis and it is unclear as to which "holes" are implied. Note that the web does not necessarily have holes therein.

Looking first at appellants' use of the word "holes" in claim 18, the word "holes" suggests openings in the form of discrete perforations or apertures extending through a member. While claim 18 implies that the interstitial spaces or pores of the filter element are in the form of "holes," there is nothing in the claims requiring that such spaces or pores be of any particular form. Accordingly, it is unclear as to precisely what physical structure the terminology "holes of

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<sup>2</sup>In the final rejection, numerous additional reasons were listed by the examiner in support of this rejection. However, the examiner now bases the § 112 rejection only on those reasons listed on page 3 of the answer. See page 9 of the answer.

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the web" in claim 18 refers to. In this regard, appellants' argument on page 6 of the brief that one of ordinary in the art would understand the term "web" as used herein to inherently have "holes" and therefore would understand what is being claimed is speculative. In light of the above, we will sustain the standing § 112, second paragraph, rejection of claim 18.

We reach an opposite conclusion with respect to appellants' use of the wording "at opposite sides thereof" in claims 11 and 16. This terminology is found in each of these claims within the context of the limitation "an electric heater in the form of a plate having two surfaces at opposite sides thereof." Clearly, one of ordinary skill in the art would have no trouble understanding what is meant by two surfaces at opposite sides of a plate. Hence, we will not sustain the § 112, second paragraph, rejection of claims 11 to 17.

*The 35 U.S.C. § 103 rejections*

Bloom, the examiner's primary reference, pertains to an electrically regenerated diesel particulate trap. The trap

may include a series of cartridges like the one illustrated in Figure 2. Each cartridge comprises an inorganic yarn wound over a perforated tube 16 to provide an inner filtering element 20, an electrically resistive expanded metal sleeve 21 covering the inner filtering element, and an organic yarn wound over the sleeve 21 to provide an outer filtering element 22 (column 3, lines 41 to 49). When the volume of particulates collected from the diesel exhaust requires that the filter be regenerated, a voltage is applied across the expanded metal sleeve to heat it resistively to a temperature that burns off the particulates (column 4, lines 1 to 7).

Stobbe and Bly also relate to electrically regenerated diesel particulate traps. In Stobbe, resistive heater element 28 is shown schematically in Fig. 3 to be located within an aperture formed by a stack of porous filter discs 20. In Bly, resistive heater elements 24 in the form of wires or rods are located within the gas passages 20, 22 of ceramic monolith filter body 12, the wires or rods being positioned such that they are spaced

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from the walls of the passages. In each instance, when it is

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necessary to regenerate the filter, the heater element is electrically heated to burn off the accumulated particulates.

Central to each of the examiner's § 103 rejections is his reliance on either Stobbe or Bly to provide a teaching that it would have been obvious to one of ordinary skill in the art to space Bloom's resistive heater sleeve 21 from each of the filtering elements 20, 22. In this regard, the examiner concedes that in Bloom, the resistive heater element 21 is not spaced from the outer surface of the inner filtering element 20 and the inner surface of the outer filtering element 22, as called for in each of the independent claims on appeal. Nevertheless, the examiner contends that it would have been obvious "to space the heating elements [of Bloom] from the surfaces of the filter as taught by either Stobbe or Bly et al . . . for initiating and completing incineration of particulates trapped on both surfaces of the filter" (answer, sentence bridging pages 5 and 6).

We cannot accept this position. A reading of Bloom's specification makes clear that an important aspect to Bloom's invention is that the heater element be in intimate contact

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with the filtering elements. For example, Bloom states:

To provide uniform heating, the expanded metal sheet is preferably *in intimate contact with* the filter element.

Because substantially the entire area of each face of each expanded metal sheet is *in contact with* the filter element, very little electrically generated heat is wasted. Further, the heat-insulating nature of the filter element tends to confine the heat, minimizing the energy required to burn off the entrapped soot particles. [Column 2, lines 6 to 14; emphasis added.]

Bloom goes on to state that, in accordance with the invention, "the electrically resistive expanded metal sheet [is] *embedded within* the filter element" (emphasis added) and that this construction offers several advantages over conventional regenerative filters having interior or exterior heating element. The advantages over these conventional constructions are set forth in the discussion found at column 2, lines 27 to 45.

Looking at the secondary references, Fig. 3 of Stobbe, which is a schematic representation of Stobbe's gas filter system, shows the resistive heater elements 28 and 30 as being

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spaced from the inner peripheries of the filter discs 20, but the specification says nothing about this relationship.

Similarly, while the drawing figures of Bly show resistive heater elements

24 and 44 as being spaced from the walls of the respective passages within which they are located, the specification is silent as to this relationship.

Under these circumstances, the examiner's position that Stobbe and/or Bly would have suggested to one of ordinary skill

in the art that the heater elements of Bloom should be spaced from the adjacent surfaces of the filtering elements "for initialing and completing incineration of particulates trapped on both surfaces of the filter" (answer, page 6) is not well taken. First, the proposed modification would go against the clear teachings of Bloom that the heater elements should in intimate contact with the filtering elements.<sup>3</sup> Second, in the

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<sup>3</sup>It is error to consider the references in less than their entirety, i.e., to disregard disclosures in the references that diverge from and teach away from the invention at hand. *W. L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983).

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absence of any clear teaching in Stobbe and Bly of the significance of their showings in the drawings concerning the placement of the heater elements relative to the surfaces of filters, it seems that the examiner's reading of what these references would have suggested one of ordinary skill in the art is based on hindsight gleaned from reading appellants' disclosure rather than on the fair teachings of these references. Third, contrary to that which is implied by the examiner in attempting to justify the proposed modification of Bloom in view of Stobbe or Bly, it can be argued, based on Bloom's disclosure at column 2, lines 24 to 45, that spacing Bloom's heater elements from the filtering elements would result in decreased efficiency in incinerating trapped particulates, thus providing a disincentive for the proposed change.

The remainder of the references applied in the examiner's various § 103 rejections (i.e., Ishida, Davis, Hammond, Stanton and Roeser) have been carefully considered but do not render obvious what we have found to be lacking in Bloom, Stobbe and/or Bly. Accordingly, the standing § 103 rejections

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will not be sustained.

*Summary*

The standing rejection of claims 11 to 18 under 35 U.S.C. § 112, second paragraph, is affirmed as to claim 18, but is reversed as to claims 11 to 17.

The standing rejections under 35 U.S.C. § 103 are reversed.

The decision of the examiner is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

*AFFIRMED-IN-PART*

IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CHARLES E. FRANKFORT	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
LAWRENCE J. STAAB	)	
Administrative Patent Judge	)	

LJS/pgg

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