

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

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Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte HOWARD S. LEIGHT

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Appeal No. 1997-1409  
Application 08/297,399<sup>1</sup>

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ON BRIEF

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

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

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<sup>1</sup> Application for patent filed August 29, 1994, entitled "Multi-Cone Earplug And Method Of Forming And Using," which is a continuation of Application 08/071,540, filed June 4, 1993, now abandoned.

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This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1 and 3-8. Claim 2 has been canceled (Paper No. 14).

We affirm-in-part.

#### BACKGROUND

The disclosed invention is directed to a molded earplug which provides enhanced sound protection and more comfortable withdrawal of the earplug from the ear.

Claim 1 is reproduced below.

1. An earplug comprising:

A unitary molded earplug having an axis that extends in forward and rearward directions, having an elongated central stem portion which extends along said axis and which has forward and rearward stem portion ends, and having a plurality of hollow truncated cone elements including a first cone element, with each of said cone elements having an apex end part merging with said stem portion and having a rear end part with an extreme rear end, and with each cone element extending with rearward (R) and radially outward (A) directional components from its apex end part along most of the axial length of the cone element to its extreme rear end, said apex end parts of said cone elements being spaced apart along said stem;

said rear end part of said first cone element having a maximum thickness which is no more than 7 percent of the diameter of said extreme rear end, and said cone rear end part having an outer surface forming an included angle of between 50° and 85° as seen in a sectional view taken perpendicular to said axis.

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The Examiner relies on the following prior art:

Hill	Des. 195,322	May 28, 1963
Knudsen	2,246,737	June 24, 1941
Baum	2,487,038	November 8, 1949
Huntress	4,055,233	October 25, 1977
Falco	4,867,149	September 19, 1989

The specification stands objected to, and claims 3, 6, and 7 stand rejected under 35 U.S.C. § 112, first paragraph, based on a lack of written description in the specification, as originally filed, for the phrase "with the area radially outside . . . said band means."

Claims 1 and 3-8 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 which applicant regards as his invention.

Claims 1, 4, 5, and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Falco in view of either Hill, Baum, or Huntress.

Claim 3 stands rejected under 35 U.S.C. § 103 as being unpatentable over Falco in view of either Hill, Baum, or Huntress, as applied in the rejection of claim 1, further in view of Knudsen.

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Claims 6 and 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Falco in view of either Hill, Baum, or Huntress, further in view of Knudsen,

We refer to the Final Rejection (Paper No. 6) and the Examiner's Answer (Paper No. 15) (pages referred to as "EA\_\_") for a statement of the Examiner's position and to the Revised Appeal Brief (Paper No. 12) (pages referred to as "Br\_\_") and the Reply Brief (Paper No. 16) (pages referred to as "RBr\_\_") for a statement of Appellant's arguments thereagainst.

#### OPINION

##### Written description

We agree with Appellant's argument (RBr1) that the original figures 2 and 3 make it clear that the area around the rear of the stem 12 is unobstructed so that the band means (flange) 40 can be grasped to pull the earplug out of the ear. Thus, we find descriptive support for the limitation in question. See Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1564, 19 UPSQ2d 1111, 1117 (Fed. Cir. 1991) ("[D]rawings alone may be sufficient to provide the 'written description of the invention' required by § 112, first

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paragraph." ). Accordingly, the rejection of claims 3, 6, and 7 is reversed.

### Indefiniteness

#### Claim 1

The Examiner states that "rearward (R) and radially outward (A) directional components" of a "cone element" in claim 1 is unclear, because a cone is not a vector (EA5).

We consider the limitation to be clear by itself and especially when viewed together with the drawing. The limitation defines the orientation of the cone.

The rejection of claim 1 is reversed.

#### Claim 3

The Examiner states that the term "semi-circular cross-section" and the language "completely filled with solid material" in claim 3 is indefinite (EA5).

We find nothing indefinite about the language. The "band means" refers to the volume of material 40 lying outside the cylinder 41, not the whole cross section shown in figure 2A. The band is solid as shown in figure 2A.

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The Examiner states that "the area" lacks antecedent basis (EA5).

It is not necessary to provide antecedent basis for every term; e.g., if the claim recites a circle, it is not necessary to provide antecedent basis before referring to "the center of the circle" because all circles inherently have a center. Here, there is inherently an area radially outside and forward of the band, so express antecedent basis is not required.

The Examiner states that the meaning of the phrase "with the area radially outside . . . said band means" cannot be ascertained (EA5).

As stated with respect to the written description rejection, the limitation and its meaning is fully supported by figures 2 and 3, as filed.

The rejection of claim 3 is reversed.

#### Claim 4

The Examiner states that it unclear what is meant by the "rearward and radially-outward directional components"

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and "locations on said peripheral portion" in claim 4 (EA5).

We consider the limitations to be clear by themselves and especially when viewed together with the drawings. The directional components limitation defines the orientation of the cone. The cone has a center portion merging with the stem and a peripheral portion, so the peripheral portion is the cone-shaped element. Thus, locations on the peripheral portion refer to locations on the cone element.

The rejection of claim 4 is reversed.

#### Claim 6

The Examiner states that it is unclear what is meant by the limitations "said peripheral portion . . . from said axis" and "semicircular cross-sectional shape" in claim 6 (EA6).

We disagree. As discussed in connection with claim 4, the directional components limitation is clear and defines the orientation of the cone, and the peripheral portion is the cone-shaped element. As discussed in connection with claim 3, the "semicircular cross-sectional shape" refers to

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the flange portion, not the flange and stem means as a whole.

The Examiner further states that "the area" lacks antecedent basis (EA6).

As discussed in connection with claim 3, it is not necessary to provide antecedent basis in this case.

The Examiner further states that the meaning of "with the area . . . flange means" in claim 6 cannot be ascertained (EA6).

As stated with respect to the written description rejection, the limitation and its meaning is fully supported by figures 2 and 3, as filed.

The Examiner further states that the terms "stem means" and "flange means" purport to be means-plus-function limitations under 35 U.S.C. § 112, sixth paragraph, but have no functional connotations (EA6).

The limitations are not interpreted as means-plus-function elements since the structures of the "stem means" and the "flange means" are fully described. There is nothing wrong with using the term "means" in a non-means-plus-function way.

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The Examiner further states that the term "substantially" provides no standard for determining the metes and bounds of the claimed subject matter of claim 6 (EA6).

We consider the term "substantially constant [diameter]" to require a diameter to be constant within a small amount of variation. For example, the diameter of the channel member in Baum would not be "substantially constant." Thus, we conclude that the term is definite to one of ordinary skill in the art.

The rejection of claim 6 is reversed.

#### Claim 7

The Examiner states that "(40)" should be deleted from claim 7. Appellant states that he does not know why the use of the numeral is objectionable (Br10).

The presence of the reference numeral does not render claim 7 indefinite. See Manual of Patent Examining Procedure § 706.03(d) (5th ed., Rev. 14, Nov. 1992) ("The mere inclusion of reference numerals in a claim otherwise allowable is not a ground for rejection."). Since this is

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the only claim using reference numerals, it may be the Examiner's point that the claims would be more consistent in appearance without the numeral. However, this is not a ground for rejection. The rejection of claim 7 is reversed.

#### Claim 8

The Examiner states that claim 8 lacks clear support in the specification, that it is impossible to determine the scope of the claim, and that it ambiguously recites both the process of forming and the process of using (EA7).

We disagree. Although claim 8 is somewhat unusual, we do not see how the process of forming and using makes the claim indefinite. Clearly, to infringe this claim would require both the earplug structure and the method of use.

The rejection of claim 8 is reversed.

#### Obviousness

Initially, we observe that Huntress is directed to an ear coupler, not an ear plug. The conical portion, or ear horn, 2 fits within the ear (col. 2, lines 54-55) and the peripheral bead 5 is intended to deform and lie upon the

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external surface of the ear as shown in figure 3 (col. 2, line 64 to col. 3, line 1). Thus, the teachings of Huntress are not relevant to the earplug of the present claim.

Claims 1, 3-5, and 8

The Examiner finds that the difference between Falco and the subject matter of claim 1 is the shape of the flange elements and concludes that it would have been obvious to make the flanges in Falco in the shape of a hollow truncated cone in view of Huntress, Hill, or Baum (EA8). The Examiner finds that Falco shows the included angle formed by the intersection of two construction straight lines drawn so as to contact the skirt is "between 50E and 85E" or "about 60E."

Appellant argues that the references do not show the claimed angle range of between 50E and 85E (claim 1) or about 60E (claims 4 and 8). It is argued that Falco shows the rear ends of the hemispherical elements extending parallel to the axis, so they have an included angle of 0E (Br5).

While we agree with the Examiner that it would have been obvious to substitute cone-shaped elements for the hemispherical elements in Falco, we agree with Appellant

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that the references do not teach the claimed angle. Hill and Baum show cone angles that are clearly greater than 90°. It is impossible to derive any cone-angle information from the hemispherical-shaped elements in Falco without speculation, because of the difference in shape. Measuring the angle between chords to the circular sections in the figure is only one of many possible angles. Appellant describes that the angle has the advantages of having the rear end of the cone lie flat against the ear canal and achieving reverse bend during pullout to minimize creation of a vacuum. Thus, although these functions have not been claimed, it cannot be said that the angle is merely a matter of design choice. Nor is the angle a matter of routine experimentation to optimize a result effective variable because none of the references discuss that the cone angle is a result effective variable for the functions taught by Appellant.

For these reasons, we conclude that the Examiner has failed to establish a prima facie case of obviousness with respect to independent claims 1, 4, and 8. The rejection of claims 1, 4, and 8 is reversed. The rejection of dependent

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claim 5 is also reversed. The addition of Knudsen as to the rejection of claim 3 does not cure the noted deficiencies. Accordingly, the rejection of claim 3 is also reversed.

Claims 6 and 7

The Examiner finds the differences between Falco and the subject matter of claim 6 to be the shape of the flange elements and the addition of a flange means of semicircular cross-sectional shape at the rear of the stem means. The Examiner concludes that it would have been obvious to make the flanges in Falco in the shape of a cone in view of Huntress, Hill, or Baum (EA11). The Examiner concludes that it would have been obvious to provide a rounded flange means on Falco in view of the flange in Knudsen. Claim 6 does not recite the angle of the cone elements.

Appellant argues that the flanges in Knudsen lie within a large skirt that restricts easy grasping of the stem immediately forward of the flange while the claims require the area radially beyond and forward of the flange to be completely unobstructed to grasping (Br8).

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We agree with the Examiner that it would have been obvious to substitute cone-shaped elements for the hemispherical elements in Falco given the teachings of cone-shaped elements in Hill and Baum.

We further agree with the Examiner that it would have been obvious to one of ordinary skill in the art to add a flange to the stem of Falco in view of the flange 18 or knob 23 in Knudsen for the same purpose of making it easier to insert and remove the earplug. The knob 23 in figure 4 of Knudsen shows that the flange may be rounded. Placing the flange at the rear of the stem in Falco would leave the area radially beyond and forward of the flange unobstructed. One of ordinary skill in the art would have realized that the knob in Knudsen does not require a surrounding skirt to perform its function.

The Examiner has established a prima facie case of obviousness with respect to claim 6. The rejection of claim 6 is sustained.

Appellant does not argue the separate patentability of claim 7. However, in any case, Knudsen shows the flange having a smaller diameter than both flanges and, thus, it

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would have been obvious to make the flange with an outside diameter less than the outside diameter of the middle cone element in Falco. The rejection of claim 7 is sustained.

CONCLUSION

The rejection of claims 3, 6, and 7 under 35 U.S.C. § 112, first paragraph, is reversed.

The rejection of claims 1 and 3-8 under § 112, second paragraph, is reversed.

The rejections of claims 1, 3-5, and 8 under § 103 are reversed.

The rejection of claims 6 and 7 under § 103 is sustained.

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

LEE E. BARRETT

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	Administrative	Patent Judge	)	
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PATENT			)	
	MICHAEL R. FLEMING		)	APPEALS
	Administrative Patent Judge		)	AND
			)	INTERFERENCES
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	ANITA PELLMAN GROSS		)	
	Administrative Patent Judge		)	

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Leon D. Rosen  
FREILICH, HORNBAKER & ROSEN  
10960 Wilshire Boulevard  
Suite 1434  
Los Angeles, CA 90024