UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL L. MOWER

Appeal 2006-3196
Application 10/860,445
Technology Center 3600

Decided: December 21, 2006
Heard: December 12, 2006

Before JENNIFER D. BAHR, ROBERT E. NAPPI, and LINDA E. HORNER, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the examiner's final rejection of claims 1, 3, and 5, all of the claims pending in the application. Claims 2 and 4 have been canceled.

We AFFIRM IN PART.

BACKGROUND

The appellant's invention relates to an electromagnetic-actuated brake. Claim 1, reproduced below, is representative of the subject matter on appeal. A copy of all of the claims on appeal can be found in the appendix to the appellant's brief.

1. In an electromagnetic actuated brake, the improvement comprising:

a plurality of interleaved disc segments which are less than complete circles;

some segments being rotatable about an axis of rotation; and

some disc segments having friction brake material carried thereon at a position remote from said axis.

The examiner relies upon the following as evidence of unpatentability:

LeBlanc	3,550,740	Dec. 29, 1970
Ely	3,731,769	May 08, 1973
Bok	4,747,473	May 31, 1988
Ericson	5,226,508	Jul. 13, 1993
Hyde	5,558,186	Sep. 24, 1996

The following rejection is before us for review:

1. Claims 1, 3, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ericson in view of Hyde.

Rather than reiterate in detail the conflicting viewpoints advanced by the examiner and the appellant regarding this appeal, we make reference to the examiner's answer (mailed May 31, 2006) for the examiner's complete reasoning in

support of the rejection and to the appellant's brief (filed March 30, 2006)[1] and reply brief (filed June 15, 2006) for the appellant's arguments.

OPINION

In reaching our decision in this appeal, we have carefully considered the appellant's specification and claims, the applied prior art, and the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations that follow.

The appellant argues claims 1 and 5 as a group. Brief, p. 3.[2] As such, we select claim 1 as the representative claim. 37 CFR § 41.37(c)(1)(vii) (2006). The appellant argues claim 3 separately.

In the rejection of independent claim 1, the examiner determined that Ericson discloses an electromagnetically-actuated brake having a plurality of interleaved disc segments (60, 70). The examiner found that some of the segments are rotatable about an axis of rotation and some segments have friction brake material disposed at a position remote from the axis. The examiner

[1] The appellant filed an Appeal Brief on October 13, 2005; however, the Board found the brief to be defective, returned the application to the examiner, and ordered the applicant to file a Substitute Appeal Brief in compliance with 37 CFR § 41.37. *See* Order Returning Undocketed Appeal to Examiner, mailed March 22, 2006. The appellant filed a Substitute Appeal Brief on March 30, 2006. We refer to this Substitute Appeal Brief throughout the opinion as the appellant's brief.

[2] The appellant attempts to condition the grouping of claims 1 and 5 on the Board selecting claim 5 as the representative claim. We decline to do so. The appellant has not separately argued the patentability of claim 5. As such, we treat this claim as standing or falling together with claim 1.

acknowledged that Ericson does not teach that the disc segments are less than complete circles. The examiner relied on Hyde to teach using interleaved disc segments that are less than complete circles. In particular, the examiner determined that because the interleaved annular discs disclosed in Hyde – and in LeBlanc, Ely, and Bok to which Hyde refers – are formed from segments, they meet the limitation of claim 1 of "a plurality of interleaved disc segments which are less than complete circles." Answer, p. 4. The examiner found that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the segmented disc of Hyde in the brake of Ericson to provide additional stability in high energy applications. Answer, p. 3.

The appellant contends that none of the prior art patents disclose interleaved segments. Brief, p. 4. In particular, the appellant argues that Hyde and the references cited in Hyde disclose segmented annular members useful in disc brakes and that these segments are attached to an annular ring and to each other. Brief, p. 5. The appellant argues,

> All of the claims require a plurality of interleaved disc segments which are less than complete circles. All of the references teach interleaving complete circles of braking elements. None of the references teach simply interleaving segments. Brief, p. 5.

While we agree with the appellant's description of the prior art, we do not construe claim 1 as narrowly as the appellant proposes. Rather, claim 1 is written more broadly to require "a plurality of interleaved disc segments which are less than complete circles." We read the claim to require only that each segment is less than a complete circle. We do not read the claim to require that each segment

remains independent from other segments such that they do not collectively form a disc.

Hyde teaches a brake assembly having a brake stack formed of a plurality of interleaved stator and rotor friction disks formed of a structural core carrier and mechanically attached friction linings. Hyde, col. 2, lines 8-11. In one embodiment, Hyde teaches forming the carrier (45) for the friction rotor disc (44) using mechanically-joined segments. Hyde, col. 4, lines 45-48 (citing to Ely, LeBlanc, and Bok). Each of the references referred to in Hyde discloses forming annular discs using sector-shaped segments. Ely, col. 2, lines 19-22; LeBlanc, col. 2, lines 50-53; and Bok, col. 2, lines 25-28. When these annular discs are interleaved with other such discs to form the brake stack, as taught in Ericson and Hyde, the brake includes interleaved disc segments as recited in claim 1. As such, we sustain the examiner's rejection of claims 1 and 5 under 35 USC § 103(a) as being unpatentable over Ericson in view of Hyde.

Pursuant to 37 CFR § 41.50(c), we suggest that the appellant consider amending claim 1 in a way to recite more clearly the invention described in the specification and to distinguish the prior art relied upon by the examiner. For example, the appellant might consider amending the recitation of "a plurality of interleaved disc segments which are less than complete circles" to more clearly claim "an interleaved disc pack wherein some layers of the disc pack each consist of a single disc segment which is less than a complete circle." Such an amendment would overcome the rejection of the claims as unpatentable over Ericson and Hyde.

With regard to claim 3, the appellant argues that all of the cited prior art patents disclose disc brake assemblies having annular friction lining assemblies, some of which are assembled using segments to form a circle. Brief, p. 4. The appellant contends that none of the cited references show friction material which is circular in plan view. Brief, p. 4.

The examiner interprets claim 3 to be broad enough to cover a situation in which, when all of the segments are combined to form a disc, the friction lining is "circular in plan view." Answer, p. 5. The examiner appears to have found that the segmented discs shown in Bok, LeBlanc and Ely, in which the segments, and thus the corresponding friction material on the segments, combine to form an annulus, satisfy the claimed limitation that the friction material is "circular in plan view." We disagree with the examiner's interpretation of claim 3.

Claim 3 recites that "the friction material of some segments is circular in plan view." The specification describes that "[t]he segment 14 carries a disc friction puck 40 on each side (see Figure 6) positioned near the end remote from the shaft 20." Specification, page 2, lines 28-29. As shown in Figure 5, the disc friction puck 40 is circular in plan view. We interpret claim 3 in view of the specification and find that one having ordinary skill in the art at the time of the invention would understand this claim to mean that the friction brake material on each individual interleaved disc segment is circular in plan view.

While we agree with the appellant that none of the art shows an individual segment with friction material that is circular in plan view, we note that Hyde suggests that the friction lining "may be in the form of individual pads or sectors of

an annular ring." Hyde, col. 5, lines 4-5. The question before us is whether this suggestion in Hyde to form the friction lining of individual pads renders obvious the claimed circular friction material. We find that the disclosure in Hyde of using individual pads to form an annular ring would not have led one having ordinary skill in the art to make the friction material on each disc segment in a circular shape. Specifically, we do not see why a person having ordinary skill in the art, intending to form an annular ring of friction material as suggested in Hyde, would use circular friction pads to do so. Rather, presumably, one would use a pad shaped in a way that would most closely form a ring when the disc segments are connected together to form the disc.

The examiner further determined that the "applicant does not have criticality for the claimed 'circular' shape and it appears that the invention would perform equally well with a variety of friction material shapes." Answer, p. 5 (citing *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). We disagree with the examiner's assertion, because Hyde teaches that "[p]ads or sectors of currently available carbon material have been found to wear much faster than continuous annular friction members of the same material." Hyde, col. 5, lines 5-7. As such, were one to use circular pads, as recited in claim 3, according to Hyde, such pads would wear faster and thus the invention would not perform equally well, as posited by the examiner. Accordingly, we do not sustain the examiner's rejection of claim 3 as unpatentable over Ericson and Hyde.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 and 5 is sustained, and the decision of the examiner to reject claim 3 is not sustained.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). *See* 37 CFR § 1.136(a)(1)(iv).

AFFIRMED IN PART

JENNIFER D. BAHR Administrative Patent Judge	)	
ROBERT E. NAPPI Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LINDA E. HORNER Administrative Patent Judge	)	

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