

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte DAVID D. McAFFEE and SLAWOMIR T. FRYSKA

Appeal No. 2005-2698
Application No. 10/316,636

ON BRIEF

Before McQUADE, CRAWFORD, and BAHR, Administrative Patent Judges.
BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-32, which are all of the claims pending in this application.

We REVERSE and enter a new ground of rejection pursuant to 37 CFR § 41.50(b).

BACKGROUND

The appellants' invention relates to a multi-disc carbon brake system and method for use in an aircraft landing system. In accordance with appellants' invention, rotors and stators of different thicknesses are used. A first group of rotors and a first group of stators are placed in alternating relation between a first pressure plate and a first back plate, with the thickness of the rotors being greater than that of the stators (Figure 1). When the wear stroke of the piston is reached because of wear and thinning of the stators and rotors (Figure 2), a first spacer is inserted to reset the wear stroke (Figure 3). When the wear stroke is again reached because of further wear on the stators and rotors (Figure 4), the stators are replaced with stators having a thickness greater than the first group of stators (Figure 5). In this configuration, the thickness of the stators is thus greater than that of the rotors, which have been partially worn. When the wear stroke is again reached (Figure 6), a second spacer is inserted to reset the wear stroke (Figure 7). Subsequently, when the wear stroke is again reached after additional braking cycles and further wear of the rotors and stators (Figure 8), the now fully worn rotors are replaced with new rotors having the same thickness as the first group of rotors (Figure 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The Applied Prior Art

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Bok	4,613,017	Sep. 23, 1986
Souetre	5,992,577	Nov. 30, 1999

The Rejection

The following rejection is before us for review:

Claims 1-32 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bok in view of Souetre.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejection, we make reference to the final rejection (mailed September 8, 2004) and answer (mailed May 31, 2005) for the examiner's complete reasoning in support of the rejections, and to the brief (filed February 24, 2005) and reply brief (filed July 19, 2005) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the

respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

We shall not sustain the examiner's rejection of claims 11-19 as being unpatentable over Bok in view of Souetre. For the reasons expressed below in the new ground of rejection, these claims are indefinite. Therefore, the prior art rejection must fall because it is necessarily based on speculative assumption as to the meaning of the claims. See In re Steele, 305 F.2d 859, 862-63, 134 USPQ 292, 295 (CCPA 1962). It should be understood, however, that our decision in this regard is based solely on the indefiniteness of the claimed subject matter, and does not reflect on the adequacy of the prior art evidence applied in support of the rejection.

We turn our attention now to the rejection of claims 1-10 and 20-32 as being unpatentable over Bok in view of Souetre. Each of independent claims 1, 20 and 31 is directed to a method comprising steps of placing a first group of stators and a first group of rotors between a first pressure plate and a first back plate, said rotors having a greater thickness than said stators; upon reaching a predetermined wear stroke of the piston, inserting a first spacer to reset said wear stroke; upon reaching said wear stroke, replacing said first group of stators with a second group of stators; upon reaching said wear stroke, inserting a second spacer to reset said wear stroke and, upon reaching said wear stroke, replacing said first group of rotors with a second group of rotors.

Bok discloses a method of assembling an aircraft brake using carbon brake disks, the method comprising assembling a group of rotors having a thickness of about 0.4 inches in alternating relation with a group of stators which may be half-worn having a thickness of about 0.2 inches (Figure 4), the rotors and stators being held between end plates. When the stators and end plates are fully worn (Figure 5), at which point the piston travel is P_2 or P_3 (the predetermined wear stroke), they are replaced with new or refurbished stators and end plates each having a thickness of 0.4 inches. When the rotors are fully worn, they are replaced with new or refurbished rotors having a thickness of 0.4 inches. According to Bok, "[i]n this way, the piston travel is reduced and the size and weight of the brake may be reduced while at the same time a substantial portion of the heat sink mass of the worn brake is retained to lower the operating temperatures" (column 1, lines 39-42).

Bok discloses all of the limitations of independent claims 1, 20 and 31 with the exception of the insertion of spacers at an intermediate wear point before the thinner of the stators or rotors are fully worn. The examiner relies on Souetre for this feature.

Souetre discloses an alternative way of enabling optimal wear of each individual disk while remaining within a minimum total axial stroke in a manner which maintains satisfactory thermal equilibrium for the heat sink. Souetre discusses other prior art techniques, such as the one taught by Bok (column 1, lines 26-55) for optimizing the degree of wear on each disk while keeping axial size as small as possible with a

minimum piston wear stroke, which use rotors and stators of different thicknesses and replace the thinner of the rotors and stators when they become fully worn, re-machining the faces of the other of the rotors and stators which are not yet fully worn for use with the new disks. According to Souetre, the Bok technique has the advantage of good equilibrium in the heat sink but suffers from the drawback of requiring re-machining of all the contact faces of the not yet fully worn disks after a first wear stroke of the pistons, in order to avoid contact between a new face and a worn face on an adjacent disk, since this gives rise to expensive loss of carbon (column 1, lines 49-55).

In order to overcome the disadvantage of the Bok technique wherein stators and rotors of different thicknesses are used, Souetre teaches using stators and rotors of equal thickness which will wear at the same time. When the maximum wear stroke of the pistons has been reached, which occurs before the stators and rotors have fully worn, Souetre discloses inserting a carbon spacer disk of thickness that is less than the wear stroke of the pistons.

In rejecting independent claims 1, 20 and 31, and claims 2-10, 21-30 and 32 depending therefrom, as being unpatentable over Bok in view of Souetre, the examiner contends that it would have been obvious to use a spacer as taught by Souetre in the Bok brake in order to reduce the brake piston travel while optimizing the brake disc utilization, thereby improving brake performance and durability (final rejection, page 2).

For the following reason, we do not agree that the applied references would have suggested such a modification.

The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.

See In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); In re Mills, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Bok and Souetre disclose alternative ways of optimizing carbon disk wear while minimizing the piston travel. Souetre discloses the spacer insertion technique as a preferred alternative to the differential rotor-stator thickness technique of Bok, not as a supplement thereto. Neither Bok nor Souetre provides any teaching or suggestion to combine the two alternative techniques.

In light of the above, we cannot sustain the examiner's rejection of independent claims 1, 20 and 31, or claims 2-10, 21-30 and 32 which depend therefrom, as being unpatentable over Bok in view of Souetre.

NEW GROUND OF REJECTION

Pursuant to our authority under 37 CFR § 41.50(b), we enter the following new ground of rejection.

Claims 11-19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim that which appellants regard as the invention.

Unlike claims 1-10 and 20-31 which are directed to a method of arranging carbon brake disks, claims 11-19 are directed to an "arrangement of carbon brake discs^[1]." The claims are misdescriptive of the appellants' disclosed invention because they require an arrangement having the four recited configurations and there is no single disclosed arrangement of the rotors and stators that comprises all four of the recited configurations. It is not clear how an arrangement can have four different configurations.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-32 under 35 U.S.C. § 103 is REVERSED. A new rejection of claims 11-19 is entered.

¹ We note that appellants have used two different spellings "disk" and "disc" in this application. While this certainly does not render the claims indefinite, appellants should consider making any

necessary corrections to maintain consistent spelling throughout the specification and claims.

This decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

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

REVERSED; 37 CFR § 41.50(b)

JOHN P. McQUADE)
Administrative Patent Judge)
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MURRIEL E. CRAWFORD) BOARD OF PATENT
Administrative Patent Judge) APPEALS
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JENNIFER D. BAHR)
Administrative Patent Judge)

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DECISION: REVERSED; 37 CFR § 41.50(b)

PREPARED: Sep 6, 2006

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