

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 WAYNE R. LUMPKIN

Appeal No. 2006-0954
Application No. 10/316,444

ON BRIEF

Before FRANKFORT, OWENS and LEVY, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal is from a rejection of claims 1-19, which are all of the pending claims.

THE INVENTION

The appellant claims a bicycle hydraulic disc brake master cylinder and a method for making it. Claim 1 is illustrative:

1. A bicycle hydraulic disc brake master cylinder comprising:

a housing;

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a bar clamp at one end of the housing configured for fastening the housing to a bicycle handle bar, the bar clamp receiving the handle bar along a clamp axis;

a piston train within the housing operatively associated with a fluid cylinder for movement within the fluid cylinder from a non-actuated position to a fully-actuated position by action of a drive force on the piston train;

a handle pivotably connected to the housing about a pivot axis in operative association with the piston train to impart the drive force on the piston train, the handle having a select length from the pivot axis to a distal end, the handle having a finger receptacle configured to receive at least one finger of a user defining an effective finger force point a first select distance from the distal end of the handle for the at least one finger received in the finger receptacle during master cylinder actuation;

a select ideal finger actuation path for a finger of a user received in the finger receptacle, the select ideal finger actuation path beginning at a start point at the effective finger force point with the handle at an engagement point where the handle begins to drive the piston train against operative fluid resistance and extending along a line at a select angle relative to the clamp axis; and

a pivotable connection between the handle and the housing, the pivotable connection being located on the housing relative to the clamp axis so that with the handle actuated by a force applied to the effective finger force point along the select ideal finger actuation path a mechanical advantage to a user resulting from the handle actuation does not diminish more than 3% as the handle is pivoted between the engagement point and a fully actuation position.^[1]

THE REFERENCES

¹ The examiner and the appellant should address on the record whether the appellant, in claims 1, 4-9 and 12-17, is claiming what the appellant regards as the invention in accord with 35 U.S.C. § 112, second paragraph. The specification indicates that a select angle of at least 90° is needed to obtain the recited actuation chord angle and

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Buckley et al. (Buckley)	6,003,639	Dec. 21, 1999
Cheever et al. (Cheever)	6,443,027	Sep. 3, 2002

THE REJECTION

Claims 1-19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Buckley in view of Cheever.

OPINION

The rejection is reversed as to claims 1-17 and 19, and affirmed as to claim 18.

Claims 1-17 and 19

We need to address only the independent claims among claims 1-17 and 19, i.e., claims 1, 9 and 15. Claims 1 and 15 require that the position of a pivotable connection of a bicycle handlebar brake handle to a housing, relative to the housing's clamp axis on the handlebar, is such that a mechanical advantage to a user resulting from actuating the handle does not diminish more than 3% as the handle is pivoted between its engagement point and fully actuated position. Claim 9 requires that the engagement point is 50 mm or less from the clamp axis and is located such that an actuation chord between the engagement point and the end point of an arc between the engagement point and the fully actuated position extends at an angle relative to the clamp axis greater than or equal to a select angle less 6°, where the

uniformity of mechanical advantage (page 17, lines 1-14), but the select angle is not

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select angle is the angle, relative to the clamp axis, of a line along which a finger on the handle moves starting at the engagement point.²

The examiner argues that Buckley discloses, in figure 2, a bicycle hydraulic disc brake master cylinder comprising each of the components recited in the appellant's claims, but does not disclose the mechanical advantage or the select angle (office action mailed July 14, 2004, page 2). Cheever, the examiner argues, discloses a bicycle brake handle and pivot assembly that increases the mechanical advantage (office action mailed July 14, 2004, page 3).

Unlike Buckley's hydraulic system, Cheever's brake lever moves a cable (col. 2, lines 34-40). "The mounting bracket and the brake lever are configured, and the effective cable attachment point disposed relative to the lever pivot, such that actuation of the brake lever about the lever pivot displaces the cable in a direction transverse to the cable length toward the lever pivot. This provides at least a 33% increase in mechanical advantage over the actuation range of the brake lever from a fully retracted to a fully deflected position" (col. 2, lines 40-

specified in those claims.

² The mechanical advantage is maintained between the engagement point and the fully actuated position, and the actuation chord is at an angle no more than 6° less than the select angle, because the pivotable connection is close to the clamp axis and the handle, at the engagement point, extends outwardly from

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47). The rate of change of mechanical advantage is primarily a function of 1) the distance (R_{ECA} , figure 6) between the lever pivot point (36) and the effective cable attachment point (48), which is the point where the cable contacts the outer periphery of the handle and is tangent thereto, and 2) the angle (β , figure 6) between a line coincident with the effective radius of the brake lever (R_{eff} , figure 6) and a line between the lever pivot point and the effective cable attachment point (col. 4, lines 55-64).

The examiner has not established that one of ordinary skill in the art would have considered Cheever's approach to obtaining mechanical advantage by selecting parameters related to a point of effective cable attachment to be applicable to Buckley's hydraulic system.

The examiner points out that it was well known in the mechanical arts that levers provide mechanical advantage (answer, page 3). The examiner argues, in reliance upon *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), and *In re Aller*, 220 F.2d 454, 105 USPQ 235 (CCPA 1955), that the appellant is merely optimizing the general conditions in Buckley's figure 1 (answer, page 4). In *Boesch*, 617 F.2d at 276, 205 USPQ at 219, the court

the handlebar such that the select angle θ in figure 15 is at least 90° (specification, page 16, line 12 - page 17, line 14).

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stated that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." The statement by the court in *Aller*, 220 F.2d at 456, 105 USPQ at 235, relied upon by the examiner (answer, page 4) is that "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

Buckley's figure 1 merely shows Buckley's master cylinder mounted on a handlebar. Neither that figure nor the remainder of Buckley (nor Cheever) discloses that the relation between the pivotable connection and the clamp axis is a result effective variable, let alone a result effective variable with respect to actuation chord angle or uniformity of mechanical advantage. Nor does that figure disclose "general conditions" as argued by the examiner. Thus, the examiner has not established that one of ordinary skill in the art would have been led by Buckley and Cheever to obtain the appellant's claimed invention by routine optimization.

We therefore conclude that the examiner has not carried the burden of establishing a prima facie case of obviousness of the invention claimed in the appellant's claims 1-17 and 19.

Claim 18

Claim 18 requires that the distance between the clamp axis and the pivot axis is less than 50 mm and that the engagement point is equal to or farther from the clamp axis than the pivot axis.

Buckley at least would have fairly suggested, to one of ordinary skill in the art, an engagement point that is near the starting position of the handle as shown in figure 1. That engagement point, as indicated by that figure, would be farther from the clamp axis than the pivot axis (24). Buckley does not disclose the distance between the clamp axis and the pivot axis.

However, one of ordinary skill in the art would have been led by Buckley's figure 1 to place the pivot axis sufficiently close, e.g., within 50 mm, to the clamp axis to accommodate small hands.

Except for asserting that the limitations in claim 18 distinguish that claim over the references (brief, page 5), the appellant does not direct any argument specifically toward claim 18.

For the above reasons we are not convinced of reversible error in the rejection of claim 18.

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DECISION

The rejection of claims 1-19 under 35 U.S.C. § 103 over Buckley in view of Cheever is reversed as to claims 1-17 and 19, and affirmed as to claim 18.

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

AFFIRMED-IN-PART

CHARLES E. FRANKFORT)
Administrative Patent Judge)
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) BOARD OF PATENT
) APPEALS
) AND
TERRY J. OWENS) INTERFERENCES
Administrative Patent Judge)
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)
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