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Datasheet for the decision of 14 June 2010

Case Number: T 1586/08 - 3.2.01

Application Number: 02723821.1

Publication Number: 1377495

IPC: B62K 21/12

Language of the proceedings: EN

Title of invention:
Object clamp, such as for bicycle component, having at least one relief area and related methods

Applicant:
L.H. Thomson Company Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 54, 56

Keyword:
"Novelty (yes) - after amendent"
"Inventive step (yes) - after amendment"

Decisions cited:
-

Catchword:
-

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Case Number: T 1586/08 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 14 June 2010

Appellant: L.H. Thomson Company Inc.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 19 March 2008 refusing European application No. 02723821.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
G. Weiss

Summary of Facts and Submissions

I. The appeal is directed against the decision posted 19 March 2008 refusing European patent application no. 02 72 3821.1.

II. The following evidence of the state of the art has been cited in the file:

D1: EP-A-1 026 410;

D2: DE-A-199 08 651;

D3: DE-U-298 09 997;

D4: US-B-6 176 640.

Additionally, the applicant acknowledged in the description *inter alia*:

D5: US-A-3 868 193.

III. The examining division found that the subject-matter of the independent claims then on file was not new or did not involve an inventive step.

IV. With its statement setting out the grounds of appeal the appellant filed an amended set of claims 1 to 13, requested that the decision under appeal be set aside and that a patent be granted. It also requested that the appeal fee be refunded but provided no reasoning to substantiate the request. The board issued a communication dated 20 May 2010 in which it requested that the appellant clarify its requests and indicated

its provisional opinion regarding amendments which would be necessary before the case could be found in order for grant.

V. With a letter of 26 May 2010 the appellant withdrew its request for refund of the appeal fee and filed amended pages 6 and 7 of the description and amendments to claims 4 and 5.

VI. Claims 1 and 4 read as follows, wherein in comparison to the corresponding text as originally filed additions are underlined and deletions are included in square brackets:

"1. An object clamp (150) comprising:
a plurality of clamp portions (152, 154) having respective recesses (153, 155) therein collectively defining a generally circular cylindrical opening (156) for receiving an object (100) to be clamped, said clamp portions (152, 154) having respective ends defining at least one pair (152a, 154a; 152b, 154b) of opposing ends; and
at least one fastener (170a, 170b) for urging the at least one pair (152a, 152b; l54a, 154b) of opposing ends toward each other during movement from a preclamped state to a clamped state;
said generally circular cylindrical opening (156) being defined by a main axis (A_m) and a main radius (R_m) extending therefrom <u>in the preclamped state</u>;
characterised in that
at least one of the recesses (153,155) has at least one relief area (180a, l8Ob) therein <u>opening outwardly</u> [extending] to at least one adjacent end (l52a, 152b, 154a, 154b) in the preclamped state and being

deflectable into engagement with the object (100) in the clamped state;
the at least one relief area (180a,180b) is defined by at least one relief axis (AR1, AR2) and at least one relief radius (RR1, RR2) extending therefrom with the at least one relief axis (AR1, AR2) being offset from the main axis (A_m) in the preclamped state; and
the or each relief area (l80a, l8Ob) defines a discontinuity with adjacent portions of a respective recess (153, 155) in the preclamped state; the discontinuity being angularly spaced inwardly from the adjacent end (152a, 152b, 154a,154b) in a range of about 4 to 60 degrees."

"4. A method for making an object clamp (150) for connecting to an object (100), the method comprising:
providing a plurality of clamp portions (152, 154) having respective recesses (153, 155) therein collectively defining a generally circular cylindrical opening (156) for receiving the object (100) to be clamped, the clamp portions (152, 154) having respective ends defining at least one pair (152a, 154a; 152b, 154b) of opposing ends; and
providing at least one fastener (170a, 170b) for urging the at least one pair of opposing ends (152a, 154a; 152b, 154b) toward each other during movement from a preclamped state to a clamped state;
said generally circular cylindrical opening (156) being defined by a main axis (A_m) and a main radius (R_m)extending therefrom in the preclamped state;
characterised by
forming at least one relief area (180a, 180b) in at least one of the recesses (153, 155) to open outwardly [extend] to at least one adjacent end in the preclamped

state and being deflectable [deflected] into engagement with the object (100) in the clamped state;
the at least one relief area (180a,180b) being defined by at least one relief axis (AR1, AR2) and at least one relief radius (RR1, RR2) extending therefrom with the at least one relief axis (AR1, AR2) being offset from the main axis (A_m) in the preclamped state; and forming each relief area (180a, 180b) with [comprises forming] a discontinuity (182a, 182b) with adjacent portions of a respective recess (153, 155) in the preclamped state, the discontinuity (182a, 182b) being angularly spaced inwardly from the adjacent end (152a, 152b, 154a, 154b) in a range of about 4 to 60 degrees."

Claims 2, 3 and 5 to 13 specify features additional to those of claims 1 and 4.

Reasons for the Decision

1. The application relates generally to a clamp for circular cylindrical objects such as the seat post on a bicycle. Such clamps typically comprise two portions each having a semi-cylindrical recess which can be urged together by a fastener, such as a bolt. The outermost ends of the recesses may define areas which bite into the cylindrical object onto which they are clamped. This is generally undesirable, particularly in the case where composite materials are used to form the object. The application proposes a solution to this problem.

Amendments

2. Claim 1 is essentially a combination of original claims 1 to 5 but with the following amendments:

- The main radius and the offset of the relief radius are both defined "in the preclamped state". Since the clamp deforms during tightening, compare regions 180a and 180b in figures 29 (preclamped) and 30 (clamped), this is a clarification. The disclosure of the radii is in page 24, lines 20 to 30 and figure 31;

- The relief area is now defined as "opening outwardly to at least one adjacent end" in place of "extending to…". This a more restrictive definition of the original and correctly represents what is shown at 180a and 180b in, for example, figures 31 and 32.

3. Claim 4 is essentially a combination of original claims 32 and 33 with additional product features from original claims 3 to 5 but with the following amendments:

- The definitions of the main radius and the offset of the relief radius both refer to "the preclamped state". This amendment is allowable for the same reasons as for claim 1;

- The relief area is defined as "deflectable" instead of "deflected". This is a clarification and is clearly originally disclosed;

– In the final step "forming each relief area comprises forming a discontinuity" has been amended to read "forming each relief area with a discontinuity". This amendment is essentially editorial with no change in meaning;

– The relief area is now defined as "opening outwardly to at least one adjacent end" in place of "extending to…". This amendment is allowable for the same reasons as for claim 1.

4. Claims 2 and 3 correspond to original claims 6 and 14 and claims 5 to 9 and 11 to 13 correspond to original claims 6, 8 to 10, 7 and 11 to 13 respectively, whereby claim 5 has been amended only editorially. The general disclosure of a "bicycle component" in claim 10 has a basis in original claim 15.

5. The description has been amended essentially only for consistency with the claims and to more fully acknowledge the state of the art.

6. It follows from the foregoing that the amendments do not result in an extension of subject-matter beyond that as originally filed (Article 123(2) EPC)).

Novelty

7. The subject-matter of claim 1 has been restricted during the appeal procedure *inter alia* to specify a discontinuity between adjacent portions of a recess in the clamp and the or each relief area. By comparison, the clamps in D1 and D4 each comprise a continuous surface which passes from a concave to a convex form

with no detail of the transition whilst that of D5 comprises a corner with no relief area. D2 relates to a clamp having two portions, each comprising a recess formed of a curved base extending into essentially straight outer regions. The clamp portions do not define a generally circular cylindrical opening. D3 relates to a clamp in which a rigid portion comprises a recess for engaging with a cylindrical object and a strap extends around the object and pulls the rigid portion into contact under the influence of an over-centre lever. There is not "at least one pair of opposing ends" urged toward each other during movement from a preclamped state to a clamped state.

7.1 It follows from the foregoing that the subject-matter of claim 1 is new (Article 54(1) EPC 1973). In view of the correspondence between the method claim 4 and the product claim 1 the subject-matter of the method claim also is new.

7.2 Since claims 2, 3 and 5 to 13 contain all features of either claim 1 or claim 4 the same conclusion is applicable also to those claims.

Inventive step

8. As already set out in respect of novelty, D1 and D4 both disclose clamping portions having a concave surface which forms the recess and which passes into a convex outer portion, whereby the problem of damage to the surface of the object (see point 1 above) would not arise. The clamp according to D2 is intended for relatively light duties, for instance carrying a lipstick on a cylindrical object such as a ski-stick.

The clamp is of a different class of duty to that to which the present application relates and it is apparent that the problem addressed by the present application would not occur. In accordance with D3 a portion comprising a recess is held in contact with a seat post of a bicycle by a textile band tensioned by an over-centre mechanism. The clamp is intended for supporting relatively low loads and implicitly the clamping forces would be insufficient to damage the seat post. None of D1 to D4 therefore represents a realistic starting point for considering inventive step (cf. Case Law 5th edition, I.D.3.5).

9. The closest state of the art for considering inventive step is known from D5. It refers to an earlier clamp shown in figure 1, also for use on a cylindrical surface, and solves a problem of the clamp failing to accurately conform to the circumference of the object. The problem is illustrated in figure 1 in which the clamp is shown contacting the object over an insufficiently long arc. The clamp proposed by D5, which comprises all features of the preamble of present claim 1, provides variable wall thickness to ensure that the clamp will deform into accurate engagement between the recess and the surface of the object. As a result, the outer ends of the recess are brought into contact with the outer surface of the cylindrical object.

9.1 The subject-matter of present claim 1 differs from the clamp proposed by D5 by the following features:

– at least one of the recesses has at least one relief area therein opening outwardly to at least one

adjacent end in the preclamped state and being deflectable into engagement with the object in the clamped state;

– the at least one relief area is defined by at least one relief axis and at least one relief radius extending therefrom with the at least one relief axis being offset from the main axis in the preclamped state; and

– the or each relief area defines a discontinuity with adjacent portions of a respective recess in the preclamped state, the discontinuity being angularly spaced inwardly from the adjacent end in a range of about 4 to 60 degrees.

It is implicit from the feature that the relief area is deflectable "into engagement with the object in the clamped state" that the relief area is concave, thereby together with the offset of the relief axis resulting in the discontinuity. As a result, the surface pressure at the end of the respective portion when the relief area is urged into contact with the object is reduced in comparison with an unrelieved area whilst nevertheless maintaining contact over the full extent of the recess. The clamp according to claim 1 therefore solves the problem of reducing damage to the surface of the object whilst maintaining clamping efficiency.

9.2 D5 is silent regarding the form of the corner between the recess and the adjacent end surface but in accordance with good engineering practice the corner would be at least broken or chamfered. Such a treatment of the corner would provide a relief having a

discontinuity at its junction with the recess. However, the form would be essentially convex, thereby reducing contact with the object in the clamped condition. The skilled person when applying his general technical knowledge therefore would not arrive at the subject-matter of present claim 1. None of the cited documents D1 to D4 relates to the problem addressed by the present application. In as far as the problem is avoided in D1 and D4 this results from the provision of a relief area which reduces contact with the object in the clamped condition, thereby decreasing the extent of engagement and potentially reducing the clamping efficiency. On the basis of the foregoing the board concludes that the subject-matter of present claim 1 involves an inventive step (Article 56 EPC 1973).

10. Claim 4 specifies the steps of a method which necessarily would result in a clamp in accordance with claim 1. The subject-matter of claim 4 therefore similarly involves an inventive step. Since claims 2, 3 and 5 to 13 contain all features of claims 1 or 4 the same conclusion is applicable equally to those claims.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

   - Claims 1 to 3, 4 (part) and 8 to 13 filed with a letter of 29 July 2008;

   - Claims 4 (part) and 5 to 7 filed with a letter of 26 May 2010;

   - Description:

     - pages 1 to 5 and 8 to 30 filed with a letter of 13 January 2005;

     - pages 6 and 7 filed with the letter of 26 May 2010;

   - Drawings pages 1/19 to 19/19 published 17 July 2003.

The Registrar: The Chairman:

A. Vottner S. Crane