Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 28 January 2021

Case Number: T 0517/18 - 3.2.08

Application Number: 11717762.6

Publication Number: 2553289

IPC: F16D55/228

Language of the proceedings: EN

Title of invention:
CALIPER BODY OF A DISC BRAKE

Patent Proprietor:
Freni Brembo S.p.A.

Opponent:
Alcon Components Limited

Headword:

Relevant legal provisions:
EPC Art. 83, 54, 56

Keyword:
Sufficiency of disclosure - (yes)
Novelty - main request (no)
Inventive step - auxiliary request (yes)

Decisions cited:
G 0003/14

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0517/18 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 28 January 2021

Appellant: (Patent Proprietor)	Freni Brembo S.p.A. Via Brembo, 25 24035 Curno (Bergamo) (IT)
Representative:	Crippa, Paolo Ernesto Jacobacci & Partners S.p.A. Via Senato, 8 20121 Milano (IT)
Appellant: (Opponent)	Alcon Components Limited Apollo Lichfield Road Industrial Estate Tamworth Staffordshire B79 9TN (GB)
Representative:	Croston, David Withers & Rogers LLP 4 More London Riverside London SE1 2AU (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 2 January 2018 concerning maintenance of the European Patent No. 2553289 in amended form.**

Composition of the Board:

Chairman	C. Herberhold
Members:	M. Foulger
	C. Schmidt

Summary of Facts and Submissions

I. With the decision posted on 2 January 2018, the opposition division decided that the patent and the invention to which it related according to then valid first auxiliary request met the requirements of the EPC.

II. The proprietor and the opponent filed appeals against this decision.

III. Oral proceedings took place before the Board on 28 January 2021 by means of video-conference.

IV. At the end of the oral proceedings, the requests were as follows:

Appellant 1 (opponent) requested that the decision under appeal be set aside and the patent revoked.

Appellant 2 (proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted, or in the alternative that the patent be maintained as found allowable by the opposition division, or according to auxiliary request 3 filed with the letter dated 2 May 2018.

V. The following document is relevant for this decision:

D16: "Show Stopper", Racecar Engineering, pp S23 - S25, June 2008.

VI. a) Claim 1 as granted (main request) reads as follows:

"**(1.1)** Caliper body (1) for a disc brake, suitable for

being arranged astride of a disc (40) per disc brake, said disc (40) having a first braking surface (41) and a second braking surface (42) opposite the first;
said disc (40) defining an axial direction (A-A) parallel to a rotation axis thereof (a-a), the latter defining an axial outward direction (AO) when facing away from the vehicle, a tangential or circumferential direction (T-T) parallel to one of its braking surfaces, the latter defining a tangential outward direction (TO) when facing away from the caliper body, with disc entry direction (I) and disc exit direction (U), and a radial direction (R-R) perpendicular to the axial direction (A-A) and to the circumferential or tangential direction (T-T), the latter defining a radial outward direction (RO) when facing away from the rotation axis of the disc;
(1.2) said caliper body comprising:
a mounting-side elongated portion (2) equipped with at least one mounting portion (12) suitable for being connected to a support for the caliper;
said mounting-side elongated portion (2) comprising a disc entry-side first tangential end (21) and a disc exit-side second tangential end (22);
said mounting-side elongated portion (2) being suitable for facing with an axial inner surface thereof (13) towards the first braking surface (41) of the disc;

(1.3) said body also comprising a non mounting-side elongated portion (3) facing with an axial inner surface thereof (14) towards the second braking surface (42) of the disc and comprising a disc entry-side first tangential end (23) and a disc exit-side second end (24);
(1.4) each elongated portion (2, 3) housing or forming at least two cylinders (15) each suitable for receiving a piston to exert a pressure on at least one pad (8, 9)

housed between said elongated portion (2, 3) of the caliper (1) and said braking surface (41, 42) of the disc (40);
(1.5) said elongated portions (2, 3) being connected together by a first end bridge (4) that connects the two disc-entry-side tangential ends (21, 23), said bridge being suitable for being arranged astride of the disc;
(1.6) said elongated portions (2, 3) are connected by a second end bridge (5) that connects the two disc exit-side tangential ends (22, 24), said second bridge being suitable for being arranged astride of the disc;
(1.7) said caliper body (1) also comprising at least three central bridges (6, 7, 100)
(1.8) connecting the two elongated portions (2, 3) in their regions arranged inside the two end bridges (4, 5);
(1.9) each of said central bridges (6, 7, 100) is **characterised in that** connecting to said elongated portions at the side of said at least two cylinders (15), so as not to radially cover more than half the cylinder, and
(1.10) forming at least four windows passing through said caliper body (1),
(1.11) wherein at least two bridges (4, 6 or 5, 7) connecting the elongated portions (2, 3) are arranged tangentially outside of the at least two cylinders (15) foreseen in the elongated portions (2, 3), avoiding there being cylinders (15) between these two bridges (4, 6 or 5, 7)."

b) Claim 1 as found allowable by the opposition division has the following features added to claim 1 as granted:

"wherein said caliper body (1) comprises four central

bridges (6, 7, 101, 102), two intermediate bridges (6,7) and two middle bridges (101, 102), said central bridges being arranged connecting the two elongated portions (2, 3) in their regions arranged inside the two end bridges (4, 5); each of said central bridges (6, 7, 101, 102) connecting to said elongated portions at the sides of a cylinder (15) of three cylinders (15) foreseen for each elongated portion (2, 3), together with the elongated portions. (2, 3) forming at least five windows passing through said caliper body (1); and wherein said caliper body (1) is a monoblock or a body in a single piece."

VII. The appellant (opponent) argued essentially the following:

a) All requests - Article 100(b) EPC

The scope of claim 1 was much larger than the disclosure of the patent. The feature of the tangential bridge was only to be found in dependent claim 4 and thus the subject-matter of claim 1 must be regarded as being broader. In such a case where the claims are broad in scope, the patent was not to be regarded as satisfying the requirements of Article 83 EPC unless the description gave a number of examples or described alternative embodiments or variations extending over the area protected by the claims. In the present case, there was no disclosure of an embodiment in which each of the central bridges formed at least four windows passing through said caliper body and in which there was no tangential bridge. Indeed, without the presence of a tangential bridge a caliper as claimed was impossible to make. The person skilled in the art was thus not provided with the necessary information to put claimed calipers without such tangential bridge into

practice.

Thus, the patent did not disclose the invention in a manner sufficiently clear and complete for the skilled person to carry it out.

b) Main request - Novelty

D16 clearly disclosed the claimed brake caliper, see in particular the photos on p. S23 and S25, upper right photo. There were two elongated portions which each contained three brake cylinders. These were connected by a large central bridge and at the tangential extremities of the elongated elements by further bridges - two at the top of the photograph and two at the bottom in the photograph on page S25. All these bridges formed four windows in the sense of the patent, i.e. the windows connected the inside of the caliper with the outside of the caliper in the radial direction.

Hence, the subject-matter of claim 1 was not new.

c) Patent as found allowable by the opposition division

i) Novelty

The caliper as shown in D16 had a large central bridge which had axial holes at the axial extremities, see page S23, upper photograph, the dark hole above the letters "CIN" of "AP RACING". These holes could be seen as windows in the sense of the patent. Thus taking the definition of the patent, whereby the bridges each form at least four windows, this central bridge could be seen as being two bridges. Moreover, the web between the two flanges was very thin and thus could be ignored

- the two flanges thus formed two bridges. Furthermore, the D16 calipers were uncontestedly monoblock.

The extra features of this request were therefore also known from the caliper shown in D16.

ii) Inventive step

Starting from D6 as closest prior art, the skilled person knew that an open structure provided better cooling. They would consequently try to add cooling holes in the central bridge. By doing so they would arrive at an arrangement where the central bridge was effectively two middle bridges separated by windows in the sense of the claim.

The skilled person would have thereby arrived at the subject-matter of claim 1 without the exercise of inventive skill.

VIII. The appellant (patent proprietor) argued essentially as follows:

a) All requests - Article 100(b) EPC

The patent disclosed at least one way of carrying out the invention. It was not necessary for the specification to describe every conceivable embodiment that fell within the scope of the claims. Thus, the patent described the invention in a manner sufficiently clear and complete so that the skilled person could carry it out. Furthermore, the allegedly missing feature of a tangential bridge could at best be considered a lack of essential feature present already in the claims as granted. This was, however, a clarity objection which was not to be examined in opposition

appeal proceedings.

b) Main request - Novelty

D16 disclosed at most three bridges connecting the elongated portions. Also, according to the description paragraphs [0040]-[0043], elongated portions had to be facing the braking surface and could not be assigned *ad libitum*. Furthermore, the outer "bridges" did not fulfill the requirement that they were connecting the elongated portions and were positioned astride the disk. Lastly, the "windows" mentioned by the appellant (opponent) did not connect the interior of the brake with the exterior because they were tangentially outside the braking area. They could thus not be considered "windows" in the sense of claim 1. The subject-matter of claim 1 was thus novel.

c) Claim 1 as found allowable by the opposition division

i) Novelty

Even if it were to be taken that the holes in the middle central bridge were there as alleged by the appellant (opponent), D16 did not show four central bridges. The large central bridge could only be regarded as a single bridge even if the web between the side flanges was made of thin material. This web provided nonetheless some structural strength such that there was only a single central bridge present. The subject-matter of claim 1 was therefore new.

ii) Inventive step

There was no reason for the skilled person to modify the brake caliper known from D16 because this caliper was already optimised. The air duct formed by the central bridge served to direct cooling air to specific parts of the brake; adding additional holes was at odds with this cooling duct function and may even provide a worse cooling effect or reduce stiffness. Whilst the skilled person would always strive to improve the cooling of the caliper, it was not obvious to do this by adding a further bridge and by possibly reducing the structural strength of the caliper. There was, moreover, no hint or motivation in the prior art that would have incited the skilled person to do so.

The subject-matter of claim 1 thus involved an inventive step.

Reasons for the Decision

1. All requests - Article 100(b) EPC

It has not been disputed that the patent discloses at least one way of carrying out the invention.

The appellant (opponent) argues that the scope of claim 1 was broader than justified by the description.

However, the claimed brake calipers are very specific calipers having a multitude of technical features. The claimed range thus cannot be regarded as being overly broad. Moreover, the skilled person could readily, on the basis of the patent specification and their common general knowledge, modify a caliper as disclosed in Figures 1 - 13 to produce alternative calipers which

also fell within the scope of claim 1.

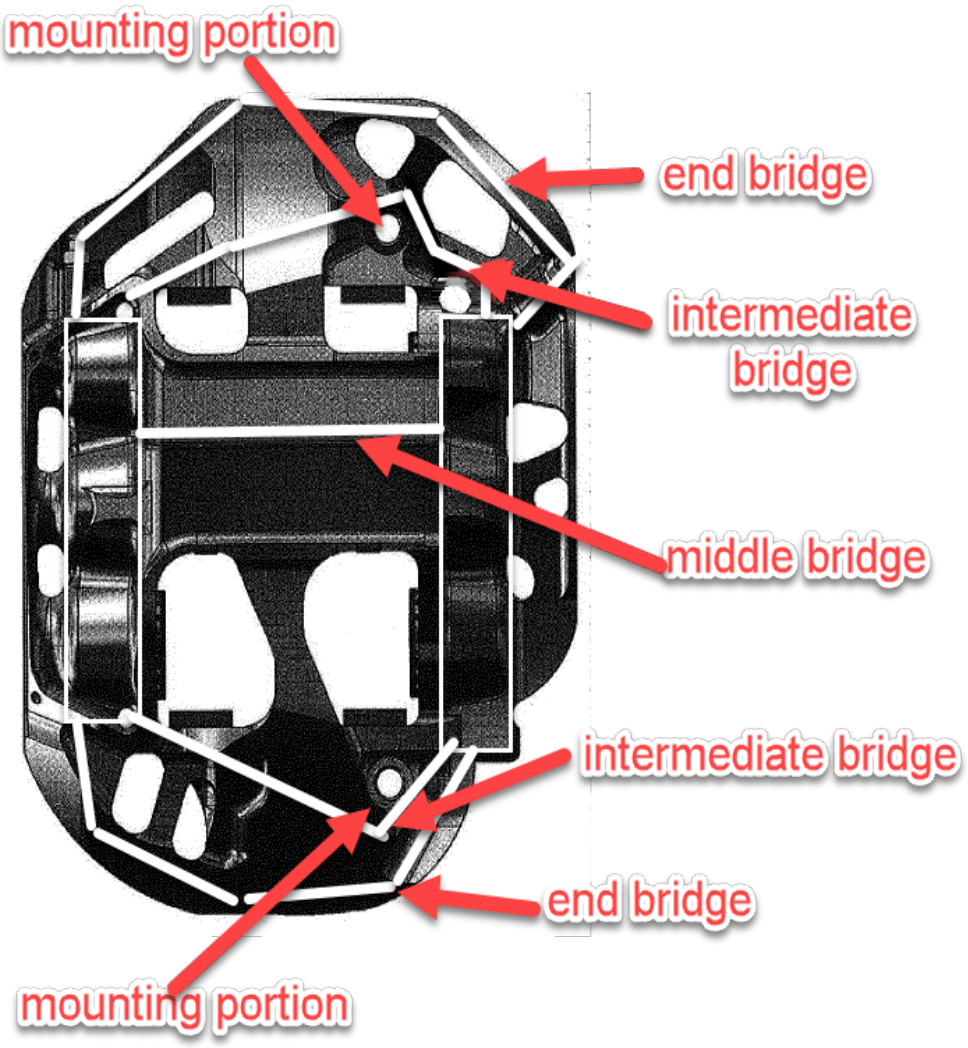
It is correct that the feature of the tangential bridge is contained within a dependent claim and is thus to be regarded as optional, which at first glance may be seen as implying that further embodiments of claim 1 existed without such a bridge. However, the appellant (opponent) has argued himself that a caliper as claimed without a tangential bridge was impossible to make. This shows that the existence of a tangential bridge is an essential feature. Omitting an essential feature from the definition of the claim is however not detrimental to the sufficiency of claim 1 because the lack of an essential feature is a clarity objection which is not to be examined in opposition appeal proceedings unless caused by an amendment - which is not the case here (G3/14).

Furthermore, assuming that the appellant (opponent)'s argument according to which the tangential bridge is a necessary feature in order to provide four windows per central bridge is correct, then the claim - which explicitly requires the provision of four windows per each central bridge - simply does not cover embodiments without such tangential bridge. If, however, calipers as claimed without a tangential bridge did not exist, then such calipers would not fall under the definition of the claim and there cannot be a requirement to disclose in the description how to make them.

Thus, the patent describes the invention in an manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2. Main request - patent as granted - novelty

The image below has been taken from D16 and annotations added by the Board. The elongated portions are shown by the white rectangles. This image essentially summarizes the interpretation illustrated by the appellant (opponent) during oral proceedings (using shared screen and pointing with the mouse).



As can be seen by the annotations above, D16 discloses a caliper with two elongated portions. The elongated portions house three cylinders and are connected by at

least one central (middle) bridge.

The appellant (proprietor) disputes that there are elongated portions and three central bridges shown in D16.

The assignment of the elongated portions was considered arbitrary and D16 was seen as disclosing merely three bridges in total. However, the term elongated portion is per se clear, there being no need to refer to the description for a clarifying (and restricting) definition. The elongated rectangular parts including the mounting portion are thus "elongated portions" in the sense of claim 1.

The patent further defines a bridge as connecting together the elongated portions (claim, feature 1.5). An element such as those shown in D16 at the extremities of the caliper was, according to the appellant (proprietor), not a bridge in the sense of the claim because it did not connect the elongated portions.

This argument is not convincing because the outermost elements in the caliper shown in D16 (labelled "end bridge" in the above picture) will inevitably transfer some force between the elongated portions. Also, these elements are positioned astride the disk. Moreover, according to the patent paragraph [0057], a window connects the inside of the caliper with the outside of the caliper in the radial direction. This is the case with the caliper shown in D16 because from the photo it is directly visible that the holes radially traverse the caliper body and thus are windows in the sense of the patent. Note that the Board does not include the screw fixing holes in this interpretation of window -

these are marked "mounting portion" in the above picture.

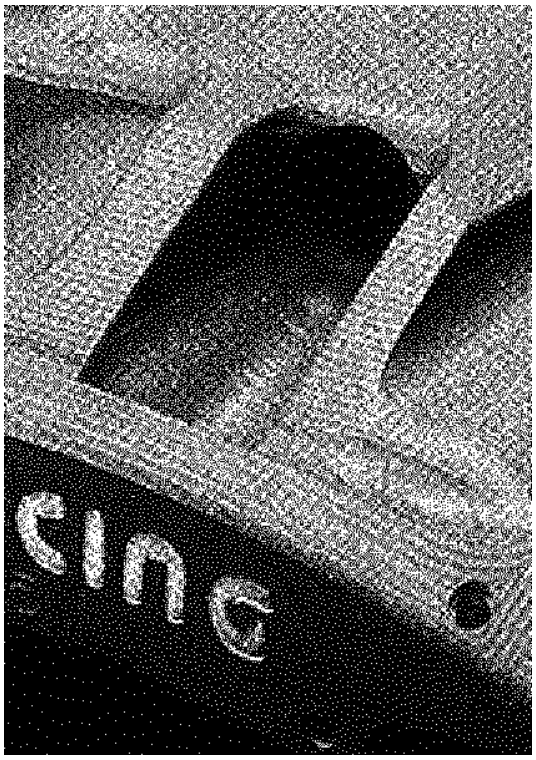
Thus, the caliper shown in D16 has elongated portions as claimed and three central bridges each forming at least four windows passing through the caliper body.

The subject-matter of claim 1 is thus not new in view of D16.

3. Patent as maintained by the opposition division

3.1 Novelty

The appellant (opponent) argued that on the brake caliper photographed in D16, there were two further axial holes present. One of these holes appears to be present on the photo at the top of p. S23 of which a detail enlarged portion is reproduced below:



The large middle bridge was then effectively two bridges each with four adjoining windows.

This argument is not however persuasive. Even if the said holes were present they would not result in there being an extra bridge.

As discussed above, a bridge in the sense of the claim connects the two elongated portions. In D16 only one central bridge can be identified which connects the elongated portions because the bridge divides around the hole only after reaching the elongated portion. This follows from the fact that the holes are not directly visible in the plan view photo D16 so there is the structure of the elongated portions underneath the holes. Thus there is only one structure ("bridge") connecting the two elongated portions.

The subject-matter of claim 1 is thus new over the caliper disclosed in D16.

3.2 Inventive step

It is common ground that D16, in the form without a closed cooling duct, is the closest prior art. As set out above D16 discloses a brake caliper with the features of claim 1 as granted.

The subject-matter of claim 1 of auxiliary request 1 differs from the teaching of D16 at least in there being "four central bridges (6, 7, 101, 102), two intermediate bridges (6,7) and two middle bridges (101, 102), said central bridges being arranged connecting the two elongated portions (2, 3) in their regions arranged inside the two end bridges (4, 5); each of said central bridges (6, 7, 101, 102) connecting to

said elongated portions at the sides of a cylinder (15) of three cylinders (15) foreseen for each elongated portion (2, 3), together with the elongated portions. (2, 3) forming at least five windows passing through said caliper body (1)."

The problem to be solved by this difference is to provide a brake caliper with improved cooling and stiffness.

The argument that, because this problem was already solved in D16, the skilled person would not seek to further develop such a caliper is not persuasive. In the Board's view, the skilled person would always try to further develop a known object. Thus, the skilled person would try to further develop the caliper of D16.

Moreover, the skilled person would indeed realise that a more open structure was conducive towards more air flow. However, firstly, the skilled person would try to direct the air flow to where it was needed. Thus, not any open structure may cool the correct parts of the caliper. The skilled person would not therefore automatically assume that dividing the large centre bridge into two would improve the overall cooling of the caliper.

Secondly, providing a further opening inevitably reduces the structural strength and stiffness of the caliper. There is no hint for the person skilled in the art as to where to provide additional openings such that they are not detrimental to the stiffness of the caliper.

Indeed, none of the cited prior art documents teaches such a high number of central bridges (and windows) be

it by dividing the middle central bridge into two bridges or not.

Hence, without any hint or respective teaching in the prior art, the skilled person would not have arrived at the subject-matter of claim 1 without the exercise of inventive activity.

Order

For these reasons it is decided that:

The appeals are dismissed

The Registrar: The Chairman:

D. Magliano C. Herberhold

Decision electronically authenticated