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**Datasheet for the decision
of 19 August 2021**

Case Number: T 2322/18 - 3.2.04

Application Number: 14190123.1

Publication Number: 2921689

IPC: F02M35/16, F02M35/10,
F02M61/14, B62K11/00

Language of the proceedings: EN

Title of invention:

Saddle-riding or straddle-type vehicle

Applicant:

Yamaha Hatsudoki Kabushiki Kaisha

Headword:

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - main request (yes)

Decisions cited:

Catchword:



Beschwerdekammern
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Case Number: T 2322/18 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 19 August 2021

Appellant: Yamaha Hatsudoki Kabushiki Kaisha
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 26 April 2018
refusing European patent application No.
14190123.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman S. Oechsner de Coninck
Members: S. Hillebrand
W. Van der Eijk

Summary of Facts and Submissions

- I. The Appeal lies against the decision of the Examining Division of the European Patent Office posted on 26 April 2018 refusing European patent application No. 14190123.1 pursuant to Article 97(2) EPC.
- II. The examining division came to the conclusion that the subject-matter of claim 1 according to all requests lacked an inventive step and thus did not meet the requirements of Articles 52 and 56 EPC having regard to the state of the art as disclosed in documents:

D1: US 2003/140882 A1

D2: JP 2009 162065 A

D6: Product catalog of the firm Okp GmbH: "OKP Parts and Engineering GmbH", 27 September 2010 (2010-09-27), XP055253921, retrieved from the Internet: URL:<http://www.okp.de/xtc2/105/115-Bertone/10-Motorteile/Vergaser/Vergaser-Gummiansaugflansch-40mm-105-A-GL::20057.html?language=de>

In addition the following documents were cited in the search report.

D3: GB 2 079 367 A

D4: EP 0 223 378 A2

D5: US 6 467 820 B1

- III. The appellant requests cancellation of the decision under appeal and the grant of a patent on the basis of the main request, filed as main request on 14 July 2016 during examination, alternatively on the basis of one of the auxiliary requests 1 to 5, filed on 15 December 2017 during examination and re-filed with the grounds of appeal.

IV. Claim 1 of the main request reads as follows:

"A saddle-riding or straddle-type vehicle (1), comprising:

an engine (4) including a cylinder (13) and a crank case (14) connected to a lower portion of the cylinder (13) and extending rearward;

a throttle body (23) disposed rearward of the cylinder (13) and being configured to adjust a flow rate of intake air supplied into the engine (4);

a pipe member (24) including a front flange (32) attached to the cylinder (13) and a rear flange (33) attached to the throttle body (23), the pipe member (24) connecting the cylinder (13) and the throttle body (23); and

a first engagement member (61) engaging together the cylinder (13) and the front flange (32), wherein:

in a plan view of the vehicle (1), at least a portion of the throttle body (23) overlaps the crank case (14);

the throttle body (23) includes a connection portion (47) connected to the rear flange (33);

at least one of the connection portion (47) of the throttle body (23) and the rear flange (33) includes a groove (471) for supplying intake air;

in a side view of the vehicle (1), the rear flange (33) overlaps a prolongation or extrapolation (L1) of the first engagement member (61) extending in an axial direction of the first engagement member (61); and

when viewed along the axial direction of the first engagement member (61), the rear flange (33) does not overlap the first engagement member (61), wherein

the groove (471) constitutes an auxiliary flow conduit (49); and

the auxiliary flow conduit (49) bypasses from an upstream side of a valve body (44) to a downstream side of the valve body (44)."

- V. The appellant argues as follows:
The subject-matter of claim 1 according to the main request involves an inventive step when starting from D2, as the skilled person would not have adopted the features of D1 to solve the problem posed.

Reasons for the Decision

1. The appeal is admissible.
2. Main request - inventive step
 - 2.1 Compared to claim 1 as originally filed, claim 1 according to the main request refines the function of the groove to supply intake air by further defining in the last two features how this is done in an auxiliary conduit that bypasses the valve body. This classical bypass function is supported by page 13, lines 30-34 of the description as originally filed.
 - 2.2 The examining division in its decision and the appellant use D2 as starting point for their inventive step argumentation.
 - 2.3 D2 is cited in the application and its disclosure is explained in detail as background art in the application. It discloses a saddle-riding or straddle-type vehicle (see figure 1), comprising: an engine (E); a throttle body and a pipe member (46) including a front flange (59A) attached to the engine's cylinder (33, 30) and a rear flange (69) attached to the throttle body (47), the pipe member (49) connecting the

cylinder (33, 30) and the throttle body (47). As visible in figure 8 a first engagement member (bolt 61) connects the cylinder (33, 30) and the front flange (59A). The throttle body (47) also includes a connection portion (bolt 71) connected to the rear flange (69). A groove 77a is visible in figure 5 to be built in the throttle body as confirmed on page 1, lines 34-37, explaining the provision of such an auxiliary flow conduit for conducting intake air in D2. When viewed along the axial direction of the first engagement member (bolt 61), the rear flange (69) does not overlap with the first engagement member.

2.4 It therefore appears undisputed that the saddle-riding or straddle-type vehicle according to claim 1 of the main request differs from D2 by the following features:
-the disposition of the throttle body rearward of the cylinder (feature F1),
-a portion of the throttle body overlaps the crank case in a plan view of the vehicle (feature F2)
-in a side view of the vehicle, the rear flange overlaps a prolongation or extrapolation of the first engagement member extending in an axial direction of the first engagement member (feature F3).

2.5 The examining division considers these features to lead to a pipe which is less bent, and formulates the technical problem as how to connect the pipe to the cylinder easily in a limited space. In stating the obviousness of the solution the provision of the features F1 and F2 is considered separate from F3 because the features are not interrelated.

2.6 The Board cannot follow this line of argumentation. In a consistent problem solution approach either two distinct effects lead to the formulation of two partial problems with associated separate solutions, or the technical effects provided by the differentiating features (here: F1, F2 and F3) are related and the formulation of a single problem is appropriate, the obvious solution of which would lead to the provision of all features in combination.

2.7 In the present case the Board rather considers the formulation of a single problem appropriate for the following reasons.

The effects of the location of the throttle aft of the cylinder (F1) above the crank case (F2) are to allow a position closer to the engine block than in D2. The effect of making the rear flange overlap a prolongation of the first engagement member (F3) is to allow a relative alignment of the rear flange with the front flange in side view and thus an associated shorter pipe length. This configuration of the front and rear flanges cooperates with the specific location of the throttle according to features F1 and F2 to allow positioning the assembly of the pipe with the throttle body into a small compact area behind the cylinder, just above the crank case.

Therefore the objective technical problem may be regarded as to propose an intake arrangement including a throttle body and intake pipe with reduced size. This problem is also in line with the problem set out in the application, second paragraph of page 3: "to suppress increases in size of the pipe member that connects together the throttle body and the engine".

2.8 Correctly stating that F1 and F2 are features typical for a sport type vehicle architecture, therefore different from D2's architecture, the examining division directly arrives at the solution defined in claim 1.

Whenever starting from the engine architecture as in D2 and trying to reduce the size of its intake, the skilled person would, however, not have reasonably considered to change the engine architecture. It is enough to modify the position of the throttle body and locate it above the crankcase, necessarily also behind the cylinder in side view. But doing this neither requires to depart from the bent configuration of the intake pipe nor to reduce its size.

Here the Board observes that causing the rear flange to overlap a prolongation or extrapolation of the first engagement member extending in an axial direction of the first engagement member according to F3, instead of giving the easy access mentioned by the examining division, would rather render the access to any bolt on that flange more difficult.

2.9 Assuming the skilled person would consider changing the engine architecture of D2 to adopt the sport type, this would indeed require redesigning the pipe to match the expected engine orientation as argued in the decision (page 3, third paragraph). The rear flange 59a should indeed be in line with the bolt's axis to realise F3, but this would also cause the same rear flange to overlap in an axial direction of the bolts as correctly observed by the appellant on page 2, last paragraph of their grounds. A feature already disclosed by D2 due to the bent configuration of the pipe would thus disappear after the suggested modification.

- 2.10 Given that starting from D2 there is no obvious incentive to depart from the bent configuration of the pipe shown in D2 when relocating the throttle body closer to the crankshaft, further consideration of D1 and D6 would not change this conclusion.
- D6 is an extract of a commercial web page for spare parts. The upper picture on page 4 shows an intake flange referenced as rubber intake flange ("Gummiansaugflansch"). The disclosure of D6 is specifically adapted for the Alfa Romeo car models listed at the bottom of page 4, and lacks any direct and unambiguous disclosure of the way the flanges are attached to the neighboring engine components, less so any technical advantage related to that configuration. The Board thus doubts that any directly useful teaching for reducing the size of a pipe between a cylinder and the throttle body in a motorbike engine could be derived therefrom.
 - D1 discloses a V-twin engine: an intake pipe 106 is attached with a front flange 108 to a cylinder, and a rear lug 98' to the throttle body 54 (paragraphs 50-51; figure 4). The intake pipe is sharply bent and it therefore requires an appropriate length opposite to the sought solution of compactness.
- 2.11 Further, considering the other cited documents D3, D4 or D5, the Board fails to recognise any compact configuration of a throttle body close to the cylinder with an associated short intake pipe that might be considered useful by the skilled person to modify the vehicle of D2.

- 2.12 The Board thus concludes that the subject-matter of claim 1 of the main request fulfils the requirements of novelty and inventive step, Article 52(1) with Articles 54(1) and 56 EPC.
3. The dependent claims 2 to 8 define further features of the vehicle of claim 1. These claims therefore also comply with the requirements of novelty and inventive step, Article 52(1) with Articles 54(1) and 56 EPC.
4. The Board is also satisfied that the description acknowledges the relevant content of the prior art D2, but requires further adaptation, such as deletion of the unclear statements on page 21.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a patent based on Claims 1 to 8 of the main request, filed as main request on 14 July 2016 during examination, and a description to be adapted thereto.

The Registrar:

The Chairman:



G. Magouliotis

S.Oechsner de Coninck

Decision electronically authenticated