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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MASANORI YOKOYAMA

Appeal 2010-006438
Application 11/368,992
Technology Center 3600

Before NEAL E. ABRAMS, PHILLIP J. KAUFFMAN,
and BART A. GERSTENBLITH, *Administrative Patent Judges*.

ABRAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Masanori Yokoyama (Appellant) seeks our review under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-5 and 7-9.¹ We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ The rejection of claim 10 has been withdrawn by the Examiner. Ans. 3. Although not stated, it follows that the rejection of claim 11, which depends from claim 10, also has been withdrawn.

THE INVENTION

The claimed invention is directed to a method and apparatus for removing a timing chain from an internal combustion engine without the need for removal of the timing chain cover.

Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. In an internal combustion engine having an engine block, a timing transmission assembly comprising:
 - a crankshaft sprocket;
 - at least one camshaft sprocket;
 - an endless, flexible, traveling transmission medium, arranged to travel in a plane of movement, and engaged with said sprockets for transmitting rotation from the crankshaft sprocket to said at least one camshaft sprocket;
 - a movable guide arranged to apply tension to a part of said medium movable from the crankshaft sprocket toward said at least one camshaft sprocket, the guide being movable toward and away from said medium, and the guide having an engagement surface facing said medium; and
 - a tensioner urging the guide against the transmission medium in order to apply tension to said medium;the internal combustion engine also having:
 - a timing transmission cover for cooperating with the engine block to form an enclosed compartment containing the sprockets, the transmission medium, the movable guide, and the tensioner, the timing transmission cover having an edge; and
 - a plurality of fasteners for attaching the timing transmission cover to the engine block, said fasteners being loosenable to allow the timing

transmission cover to be separated from the engine block sufficiently to allow the transmission medium to be removed from said compartment through a space between the engine block and said edge of the timing transmission cover without complete disengagement of any of said fasteners from the engine block and without complete disengagement of any of said fasteners from said cover;

wherein the timing transmission cover has a through hole positioned so that a fixing jig extending through the hole can engage the engagement surface of the guide when the guide is moved to a tension-releasing position allowing the transmission medium to be removed from the sprockets, and thereby hold the guide in said tension-releasing position, whereby the transmission medium can be removed from the sprockets while the timing transmission cover is separated from the engine block by only a short distance, without the need for insertion of a tool between said edge of the cover and the engine block to hold the movable guide in said tension-releasing position.

THE PRIOR ART

The Examiner relied upon the following as evidence of unpatentability:

Iwata	US 6,325,033 B1	Dec. 4, 2001
Baek	US 2004/0055556 A1	Mar. 25, 2004

THE REJECTION

Claims 1-5 and 7-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Baek in view of Iwata.

OPINION

Appellant's invention is an improved system for removing from an engine an endless, flexible timing transmission medium, such as a belt or chain, without complete disengagement of the timing transmission cover from the engine block. Spec. para. [0008]; Br. 9. It is the Examiner's view that all of the subject matter recited in independent claim 1 is disclosed by Baek, except for the plurality of fasteners for attaching the timing transmission cover to the engine, which are loosenable sufficiently to allow the transmission medium to be removed through a space between the engine block and the cover without complete disengagement of any of the fasteners from the engine block or the timing transmission cover. However, the Examiner has taken the position that such an arrangement is disclosed by Iwata, and it would have been obvious for one of ordinary skill in the art to modify the fasteners of Baek by using long bolts to connect the timing transmission cover and engine block, thus meeting the terms of the claim. Ans. 3-5.

Appellant argues that the fasteners in Iwata to which the Examiner refers are used to fasten a cover for a handhole in the timing transmission cover which is used to access the tensioner, that Iwata does not suggest that the transmission medium be removed through the handhole, and that Iwata specifically states that the timing chain can be disengaged from the camshaft sprocket without removing the timing mechanism cover. Thus, Appellant asserts Iwata does not teach or otherwise supply information that would have made it obvious to remove a timing chain by loosening but not removing the timing transmission cover. Br. 17-20.

Baek discloses a system for removing the timing chain of an engine, which comprises a timing chain cover 1 having a hole 3 into which a tool can be inserted to disengage the ratchet state of ratchet bar 116 of tensioner 106. This relaxes the pressure on the timing chain and allows it to be slackened and detached from timing chain sprockets 104 so it can be removed. Paras. [0020]-[0023]; Figs. 2-4. However, Baek states that the disclosed system allows the timing chain to be removed from the engine “without breaking away the timing chain cover from the engine.” Para. [0004]; *see also* Para. [0027].

Iwata discloses a timing mechanism cover 60 provided with a handhole 66 at a position so located as to allow timing chain tensioning device 15 to be reached to fasten or unfasten the bolts that hold it in place, so it can be taken in or out through the handhole for maintenance and replacement “without removing the timing mechanism cover.” Col. 15, ll. 2-19; Fig. 16. Handhole 66 is provided with a handhole cover 61 secured with five bolts, two of which pass through timing mechanism cover 60 and screw into the engine block. Col. 15, ll. 54-67. Without reference to any portion of the disclosure, the Examiner states “[n]ote the length of the bolts of Iwata allow some degree of ‘access’ to the chain,” and then concludes that “[i]t would have been obvious . . . to modify the fastener[s] of Baek to use long bolts to connect the transmission cover and engine block taught by Iwata in order to provide secure and removable attachment.” Ans. 5.

The Examiner’s rationale for making the proposed modification to Baek, that is, “[i]t would have been obvious . . . in order to provide secure

and removable attachment” (Ans. 5), constitutes a mere conclusory statement upon which a rejection of obviousness cannot be sustained.²

Moreover, Baek teaches a system for removing the timing chain without “breaking away” the cover, and Iwata “without removing” the cover, so no support exists in the references for the Examiner’s conclusion that it would have been obvious to modify Baek by using “long bolts” for attaching the timing transmission cover to the engine block which are

loosenable to allow the timing transmission cover to be separated from the engine block sufficiently to allow the transmission medium to be removed . . . through a space between the engine block and the edge of the timing transmission cover without complete disengagement of any of the fasteners from the engine block and without complete disengagement of any of said fasteners from said cover

as set forth in claim 1.

Claim 1 also recites a movable guide to apply tension to a part of the transmission medium and having an engagement surface facing said medium, a timing transmission cover, and a hole in the timing transmission cover positioned so that

a fixing jig extending through the hole can engage the engagement surface of the guide when the guide is moved to a tension-releasing position . . . and thereby hold the guide in said tension-releasing position[.]

The Examiner concluded that this feature is disclosed by Baek. Ans. 4-5.

Appellant argues in rebuttal that Baek fails to disclose or teach a hole

² Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)

through the transmission cover that is so positioned as to allow an inserted fixing jig to meet the terms of the above-quoted limitation. Br. 15-16.

In this regard, Baek discloses a hole 3 in timing transmission cover 1 through which “a tool such as a screwdriver having a linear rod shape is inserted” (emphasis added), which tool also passes through a hole 122 in tensioner 106 to release the tensioner ratchet bar 116 and thus release the tension on the chain. Para. [0020]. Baek states that “[t]he tool insertion hole **3** . . . and the ratchet releasing hole **122** . . . are formed along the same concentric axis.” *Id.* As shown in Fig. 4, hole 3 in the cover, and thus the aligned hole 122 in the tensioner, are spaced to the left of the movable guide. Baek does not teach that the tool inserted through hole 3 is capable of engaging the movable guide to move it to a tension-releasing position, but that such movement is accomplished by the timing chain being “pressed between the two camshaft sprockets **104** with a slight pressure by an operator’s hand,” whereupon the ratchet bar of the tensioner recedes. Para. [0023].

The Examiner concluded that Baek’s “fixing jig . . . can engage the engagement surface of the guide when the guide is moved to a tension-releasing position” (Ans. 4) and, in response to Appellant’s arguments to the contrary (Br. 3), contends that “[t]he only difference is release [of] the tension of the chain by means of [a] tensioner not the movable guide.” Ans. 13-14. However, the relationship shown in Figure 4 between the end of the tension plunger and the closest portion of the movable guide illustrates that even if the plunger 114 were to be retracted so that the movable guide is in a tension-releasing position, hole 3 would not be aligned with the movable guide. This being the case, in the absence of persuasive argument to the

contrary by the Examiner, it appears that the linear rod-shaped tool disclosed by Baek as being inserted through hole 3 would be incapable of engaging “an engagement surface [on the guide] facing said medium,” nor would such engagement be necessary in view of the alternative manner of moving the guide to a tension-releasing position that is disclosed in this reference. Thus, this limitation of claim 1 is not explicitly taught by Baek, nor is there support for concluding that it would have been obvious in view of the showing in Baek.

This being so, the rejection of claim 1 is reversed.

Since claims 2-5, 7, and 8 depend from claim 1, the rejection of these claims also is reversed.

Independent claim 9 differs from independent claim 1 only in that it recites “an endless timing chain” rather than “an endless, flexible, traveling transmission medium.” On the basis of the reasoning set forth above regarding the rejection of claim 1, a prima facie case of obviousness also has not been established with regard to claim 9, and the rejection of claim 9 is reversed.

DECISION

The rejection of claims 1-5 and 7-9 under 35 U.S.C. § 103(a) as being unpatentable over Baek in view of Iwata is reversed.

REVERSED

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