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COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER
WIEST, ANTHONY D

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ASOK KUMAR NEDUMARAN, WEN SIN SHONG, and KOK SENG FOO

Appeal 2018-002472
Application 14/764,367
Technology Center 3600

Before JENNIFER D. BAHR, JOHN C. KERINS, and EDWARD A. BROWN, *Administrative Patent Judges*.

BROWN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–3, 7–13, and 17–23.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(b). Keppel Offshore & Marine Technology Centre PTE LTD is identified as the real party in interest. Appeal Br. 3.

[2] Claims 4–6 and 14–16 are cancelled. Appeal Br. 5.

CLAIMED SUBJECT MATTER

Appellant's disclosure "relates to a method for vessel construction and in particular, to a method for vessel modification to increase the storage and/or deck space capacity of existing vessels to serve similar or a different purposes." Spec. 1, ll. 5–7.

Claims 1 and 11 are independent. Claim 1 illustrates the claimed subject matter.

> 1. A method for constructing an FLNG, FSRU or a LNG carrier, the method comprising:
>
> separating a first existing LNG carrier to form a forward section and an aft section;
>
> placing a structural block into a space between the forward section and the aft section, the structural block having a front end and a rear end;
>
> joining the forward section to the front end of the structural block and joining the aft section to the rear end of the structural block to form a new integrated vessel,
>
> the structural block having been fabricated prior to separating the first existing LNG carrier,
>
> wherein the structural block includes a gas process facility, and the gas process facility includes a regasification plant or a liquefaction plant.

Appeal Br. (Claims App.).

REJECTION

Claims 1–3, 7–13, and 17–23 are rejected under 35 U.S.C. § 103(a) as unpatentable over Ovseev (RU 2433060, pub. Oct. 11, 2011), Newman (EP 2228294 A1, pub. Sept. 15, 2010), and Nierenberg (US 2003/0159800 A1, pub. Aug. 28, 2003).

ANALYSIS

Claims 1 and 11 are both directed to a method for constructing an FLNG (floating liquefied natural gas), FSRU (floating storage and regasification unit), or LNG (liquid natural gas) carrier. Appeal Br. (Claims App.). Claim 1 recites, in pertinent part, "separating a first existing LNG carrier to form a forward section and an aft section" and "placing a structural block into a space between the forward section and the aft section," "wherein the structural block includes a gas process facility, and the gas process facility includes a regasification plant or a liquefaction plant." Claim 11 recites similar limitations. *Id.*

For claims 1 and 11, the Examiner finds that Ovseev discloses a method of constructing a marine vessel comprising, *inter alia*, separating an existing marine vessel to form forward and aft sections; placing a structural block into a space between these sections; and joining these sections to the structural block to form a new integrated vessel. Final Act. 3. The Examiner states Ovseev shows that "the method of separating an existing vessel into sections and adding a new section is common in the art." Ans. 3. The Examiner acknowledges, however, that Ovseev does not disclose that the vessel modified is an LNG carrier, or that the structural block includes a gas process facility including a regasification plant or a liquefaction plant, as claimed. Final Act. 3. The Examiner finds that Newman teaches a vessel for transporting liquefied natural gas (i.e., an LNG carrier) and Nierenberg teaches adding a regasification plant onboard an LNG vessel. *Id.* (citing Newman ¶ 1).

The Examiner concludes that it would have been obvious to one of ordinary skill in the art to apply Ovseev's method and insert a structural

block into an LNG carrier, as disclosed by Newman, where the structural block includes a gas process facility having a regasification plant, as disclosed by Nierenberg. Final Act. 3. The Examiner states that the motivation for the modification is to apply existing methods of constructing vessels to known types of vessels, such as an LNG vessel, and to equip the LNG vessel with a gas process facility including a regasification plant to increase the vessel's functionality and reduce the required shore side infrastructure. *Id.* at 3–4. The Examiner also states that the motivation relied upon is provided by Ovseev, which "adds a new section to a vessel to increase the capacity and extend the life of the vessel," and the Examiner "only relies on Newman to show that LNG vessels are known and on Nierenberg to show that having a regasification plant is desirable." Ans. 5.

Appellant contests the proposed combination by first pointing out that each of applied references fails to disclose separating an existing LNG carrier to form forward and aft sections, or a structural block including a gas process facility including a regasification plant or liquefaction plant, as claimed. Appeal Br. 9.

Newman discloses that the dominant approach to marine transport of LNG utilizes vessels having hull structures designed for that purpose. Newman ¶ 6. In contrast to that approach, Newman discloses a vessel for transporting LNG comprising cryogenic containers mounted to the open deck of the vessel, and means for transporting LNG to and from the cryogenic container(s). Newman, Abstract. Figure 1b of Newman shows an embodiment of the vessel including cryogenic containers 3–1 to 3–10 and LNG pumping equipment 10 arranged on the open deck. Newman discloses that "[t]he vessel according to the invention is particularly advantageous as it

can be manufactured at low cost because it does not require a specially adapted hull." Newman ¶ 14. Newman states, "there is the opportunity to economically design and build suitable vessels that maximise the open deck area to enable greater volume of LNG to be transported using the proposed method." *Id.*

As noted by Appellant, Newman also discloses retrofitting existing vessels to make them suitable for transporting LNG. Appeal Br. 12. Regarding retrofitting, Newman describes

> a method of modifying a vessel to make it suitable for the transportation of liquefied natural gas comprising, mounting at least one cryogenic container to the open deck of the vessel and providing the vessel with means for transporting liquefied natural gas into and out of the container. *Utilising this method, existing vessels can, therefore, be retrofitted very easily without substantial modification of the original structure to incorporate the cryogenic containers and a means for loading and unloading the LNG to or from the containers*.

Newman ¶ 16. *Id.* (emphasis added). Accordingly, Newman teaches locating cryogenic containers and loading/unloading means on the open deck of vessels for modified vessels as well.

Ovseev discloses a method of repairing ships, comprising dividing the ship hull into two parts, moving the two parts apart from each other to fit an extra block between them that maintains the deck level and central section width, and then joining the block to the hull. *See* Ovseev, Abstract. Ovseev indicates that the modification provides increased ship load capacity and higher efficiency. *Id.* Ovseev discloses that Figure 1 shows a vessel prior to reconstruction and Figure 2 shows a vessel following reconstruction. *See*

Ovseev ¶¶ 19–20.[3] As shown in Figure 2, the reconstructed vessel includes an "additional block" 7. *See id.* ¶ 32.

We agree with Appellant that the Examiner has not provided an adequate reason why one of ordinary skill in the art would have modified Newman's LNG transport vessel in view of Ovseev and Nierenberg in the proposed manner. Appeal Br. 13. Even if modifying Newman's LNG carrier by applying Ovseev's method would increase the load capacity and service life of Newman's vessel by increasing the vessel's length, Appellant emphasizes that Newman teaches allocating an open deck on an existing vessel for cryogenic containers and means for loading and unloading the LNG from the containers, without substantially modifying the vessel's existing structure. *Id.* Newman discloses that "[v]essels having the *LNG stored exclusively in cryogenic containers mounted on the open deck* have the further advantage that the unused hull area may be utilised for the transport of other cargo." Newman ¶ 17 (emphasis added). Appellant contends that a skilled artisan would not employ the method of modifying a ship structure disclosed in Ovseev, such that the cryogenic containers and other equipment can be fitted in the extra block between two divided parts of the ship. Appeal Br. 13. We agree with Appellant that the Examiner has not provided an adequate reason with a rational underpinning why a skilled artisan would have substantially modified the structure of Newman's LNG carrier in this manner to include Ovseev's additional block, where Newman discourages the storage of LNG in hulls in order to avoid substantial modification of the original structure. In contrast, Newman teaches

[3] We refer to the English-language translation of Ovseev mailed Oct. 2, 2017.

"build[ing] suitable vessels that maximise the open deck area to enable greater volume of LNG to be transported." Newman ¶ 14.

Appellant points out that Nierenberg teaches the use of submerged heat exchangers to enable heat transfer from surrounding seawater for gasifying LNG on an LNG carrier. *Id.* at 13–14. Appellant contends that when there is a need for space to be provisioned on an FLNG, FSRU, or LNG carrier for a gas process facility, based on the teaching of Nierenberg, a skilled artisan would have provisioned such space below deck, without substantially modifying the ship's structure, such as separating a forward section and an aft section to place a new structural block between these sections. *Id.* at 14. Although Nierenberg teaches regasifying LNG on board an LNG carrier, we agree with Appellant that the Examiner has not provided an adequate reason with a rational underpinning why a skilled artisan would have substantially modified Newman's LNG carrier to incorporate Ovseev's additional block and then modified the additional block to include Nierenberg's regasification structure.

Accordingly, we do not sustain the rejection of claims 1 and 11, or their dependent claims 2, 3, 7–10, 12, 13, and 17–23, as unpatentable over Ovseev, Newman, and Nierenberg.

CONCLUSION

The Examiner's rejection is reversed.

DECISION SUMMARY

Claims Rejected	Basis	Affirmed	Reversed
1–3, 7–13, and 17–23	§ 103(a) Ovseev, Newman, Nierenberg		1–3, 7–13, and 17–23

REVERSED