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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HIROAKI KOMATSUBARA, MASANAO KOBAYASHI,
TOSHIAKI SHIMIZU, IKUO YAMAUCHI, TAKASHI MORIKAWA,
EIJI TABATA, FUMIO KAWAHARA, and YUZO MATSUDA

Appeal 2019-004309
Application 15/124,752
Technology Center 1700

Before JEFFREY W. ABRAHAM, ELIZABETH M. ROESEL, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

ROESEL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 2, 5–8, and 11–13. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real parties in interest as AOKI SCIENCE INSTITUTE CO., LTD of Tokyo, Japan, TOYOTA JIDOSHA KABUSHIKI KAISHA of Aichi, Japan, and MEC INTERNATIONAL CO., LTD. of Aichi, Japan. Appeal Br. 3.

CLAIMED SUBJECT MATTER

The claims are directed to an oil-based release agent and a method of applying the release agent to a metal die. Appeal Br. 19, 21 (claims 1 and 12).² According to the Specification, the release agent and method are useful for die casting of aluminum, magnesium, zinc, or other non-ferrous metal to make automobile parts or machine parts. Spec. ¶¶ 1–3. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. An oil-based release agent comprising
 - a petroleum-based hydrocarbon solvent (a) and
 - an adhesive (b),
 - wherein adhesive (b) is dimethyl polysiloxane having a weight average molecular weight of 100,000 or more, and
 - wherein the release agent contains 0% water.

Appeal Br. 19 (Claims Appendix).

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Morro	US 4,059,534	Nov. 22, 1977
Komatsubara	US 2011/0250363 A1	Oct. 13, 2011

REJECTION

The Examiner maintains the rejection of claims 1, 2, 5–8, and 11–13 under 35 U.S.C. § 103 as unpatentable over Komatsubara and Morro.

² Our citations are to the unnumbered pages of the Appeal Brief, consistent with the Table of Contents.

OPINION

Claim 1

The Examiner finds that Komatsubara discloses an oil-based release agent and teaches or suggests all limitations of claim 1, except for the molecular weight limitation. Final Act. 3. The Examiner finds that Morro teaches that molecular weight of dimethyl polysiloxane is a result effective variable for viscosity, and that it would have been obvious to modify the composition of Komatsubara by choosing an adhesive with the recited molecular weight through routine optimization. *Id.*

Appellant argues that Komatsubara teaches away from a water-free release agent and that the Examiner's rejection requires selection of an incomplete portion of Komatsubara's release agent. Appeal Br. 8–12.

After considering Appellant's brief,³ the Examiner's Answer, the cited teachings of the references, and the record as a whole, we determine that a preponderance of the evidence supports the Examiner's rejection of claim 1 as obvious over Komatsubara and Morro.

Appellant does not challenge the Examiner's findings regarding Morro's disclosure of the molecular weight limitation or modification of Komatsubara in view of Morro. Instead, Appellant's arguments focus on the limitation of claim 1 that recites "the release agent contains 0% water." Appeal Br. 8–12, 19.

In the Answer, the Examiner provides the following response to Appellant's arguments:

To the extent that [Komatsubara] suggest other agents which, like water, modify electrical resistance for electrostatic

³ Appellant submitted no reply brief.

spraying, it would have been obvious to one of ordinary skill in the art at the time of invention to use these other agents and omit water. Appellant's argument that [Komatsubara] teach[es] away from omitting water altogether (Appeal Brief, p. 9), . . . *is correct to the extent that it suggests using water instead of other effective agents for modifying electric resistance*. That is, although one would not have modified [Komatsubara] by omitting every possible component to modify electrical resistance (in this case water), *[Komatsubara] also suggests that one could use other components instead of water for the same purpose*. [Komatsubara] teaches that, although not preferred, alcohol or ammonium salt can be used as an electrostatic assistant agent at a mold casting site. [Komatsubara ¶ 16.] Thus, [Komatsubara] suggests that it would have been obvious to modify the release agent to be water-free by substituting in other agents like alcohol or an ammonium salt, which permits the omission of water.

Ans. 4–5; *see also id.* at 6 (repeating the same text).⁴ We find that the Examiner's reasoning is persuasive and supported by Komatsubara.⁵

Komatsubara teaches that electrostatic spraying is an “effective means” to solve problems that occur when applying oil type lubricant to a die. Komatsubara ¶¶ 12–16. In the context of discussing electrostatic spraying as a solution for applying oil type lubricant to a die, Komatsubara discusses the teachings of two references that relate to electrostatic spraying of paint. Specifically, Komatsubara discloses:

⁴ Appellant has waived any argument that the Examiner's Answer presents a new ground of rejection. *See* 37 C.F.R. § 41.40(a).

⁵ In the Answer, the Examiner asserts that Komatsubara teaches or suggests a water-free composition in two alternative ways: (1) by teaching an “oil type lubricant” that does not contain water; and (2) by suggesting the substitution of alternative electric resistance modifiers for water. Ans. 3. We affirm the Examiner's rejection on the basis of alternative (2) and do not express an opinion regarding alternative (1).

(JP-A) No. 9-235496 relates to technologies used as the measures taken to impart conductivity to a paint to thereby drop the electric resistance by adding an alcohol or ammonium salt as an electrostatic assistant agent. However, alcohol or ammonium mists are not preferable at the casting site. JP-A No. 2000-153217 relates to technologies which hint the addition of an electrostatic assistant agent to a paint. However, “an electrostatic assistant agent having high polarity” is dissolved only in an amount of 0.3% by mass in “an oil type lubricant having low polarity,” and an electrostatic assistant agent tends to cause sedimentation and separation, which is not preferable. . . . If a polar solvent is added, the dissolution of the electrostatic assistant agent may be increasingly solved. However, the health of a site worker may be damaged because of the polar solvent. For this, polar solvents are not preferable in the composition of the oil type lubricant in consideration of human health.

Komatsubara ¶ 16. Komatsubara paragraph 16 teaches that electrostatic spraying is a desirable solution for applying oil type lubricant to a die, but that an electrostatic assistant agent must be added to impart electrical conductivity to the oil type lubricant. *Id.* In addition, Komatsubara paragraph 16 teaches that electrostatic assistant agents known for use in paint are “not preferable” for use in die casting due to human health concerns. *Id.* Such known electrostatic assistant agents include alcohol and ammonium salt. *Id.*

In paragraph 17, Komatsubara discloses the inventors’ solution to the problem of electrostatic spraying of an oil type lubricant:

In order to solve the additional problems according to the electrostatic spraying as mentioned above, the present inventors have proposed such a technology that water and a solubilizing agent are blended in an oil type lubricant to impart slight conductivity for electrostatic spraying in the case of a high-pressure die casting.

Komatsubara ¶ 17. Taken together, Komatsubara paragraphs 16 and 17 teach that the combination of water and a solubilizing agent is an alternative to alcohol and ammonium salt for imparting conductivity to an oil type lubricant for electrostatic spraying. *Id.* ¶¶ 16, 17. Conversely, Komatsubara paragraphs 16 and 17 teach that alcohol and ammonium salt are less desirable alternatives to the combination of water and a solubilizing agent for imparting conductivity to an oil type lubricant for electrostatic spraying. *Id.* Based on these teachings, we agree with the Examiner that Komatsubara “suggests that it would have been obvious to modify the release agent to be water-free by substituting in other agents like alcohol or an ammonium salt, which permits the omission of water.” Ans. 5, 6.

Appellant argues that Komatsubara teaches away from an oil-based release agent that is water-free and that “water is specifically required by Komatsubara et al. in order to achieve the correct resistance for electrostatic application of its release agent.” Appeal Br. 8–11 (citing Komatsubara ¶¶ 67, 74, 148). We disagree. Appellant’s argument fails to address the substitution of alcohol or ammonium salt for the combination of water and a solubilizing agent as electrostatic assistant agents for imparting conductivity to an oil type lubricant, as proposed by the Examiner (Ans. 5, 6) and suggested by Komatsubara paragraphs 16 and 17.

There is other evidence in Komatsubara that water is not “specifically required,” as argued by Appellant. Appeal Br. 10. The range of water content in Komatsubara’s release agent is “7.5% by mass or less,” which includes “0% water,” as presently claimed. Komatsubara, Abstract, ¶ 40. Comparative Example 1 and Example 1 of Komatsubara both contain 0% water. *Id.* ¶ 151, Table 2. Although the electric resistance for both of these

examples was “infinite,” Komatsubara does not exclude the 0% water example from the scope of its disclosure, finding “from these facts that water is preferably in the range 7.5% by mass or less.” *Id.* ¶ 151. Komatsubara offers several possible explanations, including that the measured resistance “may have no correlation” with the resistance “in an actual machine,” which operates at much higher voltage, and “that a lubricant formulated with a polar lubricating additive can be used even in a wider range of electric resistance.” *Id.* Accordingly, we are not persuaded that water is specifically required by Komatsubara’s release agent composition.

Next, Appellant argues that the Examiner’s rejection requires selection of an incomplete portion of Komatsubara’s release agent without a reasonable expectation of success. Appeal Br. 11–12. Again, Appellant’s argument fails to address the substitution of alcohol or ammonium salt for the combination of water and a solubilizing agent as electrostatic assistant agents for imparting conductivity to an oil type lubricant, as proposed by the Examiner (Ans. 5, 6) and suggested by Komatsubara paragraphs 16 and 17.

Next, Appellant argues that Komatsubara teaches away from ammonium salt for its electrostatic release agent. Appeal Br. 12–15. Although Appellant presents this argument for claims 6 and 8, we consider it in the context of the Examiner’s obviousness rationale for claim 1, to which it equally applies. Ans. 4–5, 6. Citing the paragraph 16 teaching that “alcohol or ammonium mists are not preferable at the casting site,” Appellant argues that Komatsubara “teaches that ammonium salt cannot be used with electrostatic spray application of mold release agent” and “is dismissing such inclusion entirely.” Appeal Br. 12–13 (quoting Komatsubara ¶ 16). We disagree with Appellant’s interpretation of

Komatsubara paragraph 16 and agree with the Examiner's interpretation.

Ans. 5–7. As the Examiner aptly explains,

The word “preferable” is a comparison among alternatives; that there exist more desirable or better alternatives is not to say that less preferable alternatives would not be used. In this case, it is clear from the text of [Komatsubara] that the inventor considered alcohol and ammonium mists not only as agents for modifying electrical resistance of paint, but also specifically for mold coatings and did not dismiss them entirely, but instead found other agents more desirable.

Id. at 7. The Examiner's analysis is consistent with recent Federal Circuit guidance, as follows:

[T]he teaching away inquiry does not focus on whether a person of ordinary skill in the art would have merely *avored* one disclosed option over another disclosed option. In assessing whether prior art teaches away, that “better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.” . . . When there are only two possible formulations and both are known in the art at the time, the fact that there may be reasons a skilled artisan would prefer one over the other does not amount to a teaching away from the lesser preferred but still workable option.

Bayer Pharma AG v. Watson Labs., Inc., 874 F. 3d 1316, 1327 (Fed. Cir. 2017) (quoting *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012)). Here, similar to the facts presented in *Bayer*, the evidence shows that a skilled artisan would have *preferred* a release agent formulation containing water and a solubilizing agent over a formulation containing alcohol or ammonium salt as an electrostatic assistant agent. Komatsubara ¶ 16. But that evidence is not sufficient to support a finding of teaching away from Appellant's claimed release agent that contains 0% water. *Id.* at 1328.

Accordingly, we sustain the Examiner's rejection of claim 1.

Claim 6

Claim 6 depends indirectly from claim 1 and recites that the oil-based release agent comprises a conductive modifier selected from a group that includes “an ammonium salt.” Appeal Br. 20.

The Examiner finds that it would have been obvious “to modify the composition of [Komatsubara] by adding ammonium salt to modify conductivity, because [Komatsubara] discloses that it was known in the prior art to add an ammonium salt to modify conductivity of oil based lubricants.” Final Act. 4 (citing Komatsubara ¶ 16).

Appellant challenges the Examiner’s finding, presenting the same argument regarding teaching away from ammonium salt as discussed above for claim 1. Appeal Br. 12–13. We are not persuaded by Appellant’s argument for the reasons discussed above for claim 1.

Accordingly, we sustain the Examiner’s rejection of claim 6.

Claim 8

Claim 8 is an independent claim and recites “[a]n electrostatic spraying oil-based release agent comprising a petroleum-based hydrocarbon solvent . . . and a conductive modifier,” where the conductive modifier is selected from a group that includes “an ammonium salt” and “the electric resistance is 2 to 400 MΩ.” Appeal Br. 21.

The Examiner finds that Komatsubara suggests an electric resistance of 5–400 ohms. Final Act. 4 (citing Komatsubara ¶ 74). The Examiner repeats the same finding regarding ammonium salt as discussed above for claim 6. *Id.* (citing Komatsubara ¶ 16).

Appellant does not challenge the Examiner’s finding concerning the electric resistance limitation of claim 8. Instead, Appellant focuses on the

Examiner's finding regarding ammonium salt, presenting the same teaching away argument as discussed above for claim 1. Appeal Br. 12–13. We are not persuaded by Appellant's argument for the reasons discussed above for claim 1.

Accordingly, we sustain the Examiner's rejection of claim 8.

Claim 12

Claim 12 recites a “method for applying an oil-based release agent, comprising applying the oil-based release agent according to claim 1 to a metal die,” and specifies a range of particle speeds and mist diameters.

Appeal Br. 21.

The Examiner finds that Komatsubara suggests applying a release agent to a metal die by electrostatic spraying. Final Act. 5. In addition, the Examiner finds that particle speed and mist diameter are result-effective variables and that the recited ranges could be determined by one of ordinary skill in the art through routine optimization. *Id.*

Appellant argues that Komatsubara teaches away from a water-free release agent and that the Examiner's rejection requires applying an incomplete portion of Komatsubara's release agent to a metal die. Appeal Br. 16–17.

The bulk of Appellant's argument regarding claim 12 is the same as Appellant's argument regarding claim 1. *Compare* Appeal Br. 16 (addressing claim 12), *with id.* at 8, 11–12 (addressing claim 1). We are not persuaded by Appellant's argument for the reasons discussed above for claim 1.

In addition, Appellant presents the following argument regarding claim 12:

Further to the rejection of claim 1, the rejection of claim 12 requires envisioning that one of skill in the art would apply only the non-water portion of the release agent of [Komatsubara] to a metal die. However, the only reasonable suggestion in [Komatsubara] would be to apply the entirety of its release agent to a metal die. There would be no reasonable expectation of success in applying only a portion of the fully described release agent of [Komatsubara] to a metal die.

Appeal Br. 17.

We agree with the Examiner that “Appellant’s argument is valid only in the case that water is chosen as the electric resistance modifying agent . . . and not one of the other ones suggested in” paragraph 16 of Komatsubara. Ans. 8 (emphasis omitted). Appellant’s argument fails to address the substitution of alcohol or ammonium salt for the combination of water and a solubilizing agent as electrostatic assistant agents for imparting conductivity to an oil type lubricant, as proposed by the Examiner (Ans. 6–8) and suggested by Komatsubara paragraphs 16 and 17.

Accordingly, we sustain the Examiner’s rejection of claim 12.

Remaining claims

Appellant presents no arguments specifically directed to dependent claims 2, 5, 7, 11, or 13 separate from its arguments regarding independent claims 1 and 8. Accordingly, we sustain the Examiner’s rejections of these dependent claims for the reasons discussed above regarding independent claims 1 and 8.

CONCLUSION

The Examiner’s rejection is affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference/Basis	Affirmed	Reversed
1, 2, 5-8, 11-13	103	Komatsubara, Morro	1, 2, 5-8, 11-13	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED