

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SANGKEUN RHEE, ERIC J. RAINAL,
and MICHAEL P. DELLA VECCHIA

Appeal 2008-0631
Application 10/783,357
Technology Center 1700

Decided: February 26, 2008

Before FRED E. MCKELVEY *Senior Administrative Patent Judge*,
MICHAEL P. TIERNEY and JAMES T. MOORE, *Administrative Patent
Judges*.

MOORE, *Administrative Patent Judge*.

DECISION ON APPEAL

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STATEMENT OF CASE

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The Appellants appeal under 35 U.S.C. § 134 (2002) from a final
rejection of claims 1-29 and 40-43.¹ We have jurisdiction under 35 U.S.C.
§ 6(b) (2002).

¹ Claims 30-39 have been canceled, and claims 44-49 have been withdrawn.

1 The Appellants' claims are directed to multilayer sheets and films
2 composed of a fluoropolymer layer, an adhesive tie layer and a
3 thermoplastic polymer layer.

4 Claims 1 and 40 are the only independent claims in the application.
5 The Appellants argue the rejection of claims 1-28 and 40-42 together.
6 Therefore, we select independent claim 1 to decide the appeal regarding this
7 rejection. 37 C.F.R. § 41.37 (c)(1)(vii)(2006). Accordingly, the remaining
8 claims subject to this rejection stand or fall with claim 1.

9 The Appellants also argue the rejection for dependent claims 29 and
10 43 together. We select dependent claim 29 to further decide the appeal
11 regarding this rejection, and claim 43 stands or falls with claim 29.

12 Claim 1 reads as follows:

- 13 1. A multilayered film comprising:
14 a) a fluoropolymer layer having first and second surfaces;
15 b) an adhesive tie layer, having first and second surfaces, on the
16 fluoropolymer layer with the first surface of the adhesive tie
17 layer on the first surface of the fluoropolymer layer; which
18 adhesive tie layer comprises a combination of at least one
19 tackifier and at least one ethylene/alpha-olefin copolymer; and
20 c) a thermoplastic polymer layer, having first and second
21 surfaces, on the adhesive tie layer with the first surface of the
22 thermoplastic polymer layer on the second surface of the
23 adhesive tie layer.

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25 Claim 29 reads as follows:

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27 29. A tube formed from the multilayered film of claim 1.
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1 THE EVIDENCE

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3 The Examiner relies upon the following as evidence in support of the
4 rejections:

5 Urawa	US 4,751,270	Jun. 14, 1988
6 Tsai	US 2003/0008152 A1	Jan. 09, 2003
7 Kawachi	US 6,656,601 B1	Dec. 02, 2003
8 Jing	US 6,849,314 B2	Feb. 01, 2005

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10 THE REJECTIONS

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12 The following rejections are before us for review:

- 13 1. Claims 1-28 and 40-42 stand rejected under 35 U.S.C. § 103(a) over
14 the combination of Tsai (US Patent Application 2003/0008152), Kawachi
15 (US Patent 6,656,601), and Urawa (US Patent 4,751,270).
16 2. Claims 29 and 43 stand rejected under 35 U.S.C. § 103(a) (2004) over
17 the combination of Tsai, Kawachi, and Jing (US Patent 6,849,314).

18 We AFFIRM.

19 ISSUE

20 Have the Appellants established that the Examiner erred in
21 determining that it would have been obvious to one of ordinary skill in the
22 art at the time the invention was made to combine the claimed elements, all
23 of which are known in the prior art and are being used for their known
24 functions?

25 FINDINGS OF FACT

26 The record supports the following findings of fact by a preponderance
27 of the evidence.

- 28 1. Tsai is directed to multilayer films that have a high moisture
29 barrier and are substantially transparent. (Tsai p. 1, para. 0002).

1 2. Tsai describes that it is well known in the art to produce multilayer
2 fluoropolymer films. (p. 1, para. 0004).

3 3. Tsai describes a multilayer film that comprises a fluoropolymer
4 layer and a cyclic olefin copolymer layer, i.e., a thermoplastic polymer layer,
5 attached by an adhesive tie layer. (p. 1, para. 0008, 0013).

6 4. Tsai describes that suitable adhesive polymers for the adhesive tie
7 layer include the modified polyolefin compositions described in Urawa. (p.
8 2, para. 0015).

9 5. Urawa describes that copolymers of alpha-olefin, such as ethylene,
10 are useful for the preparation of its modified polyolefin compositions.
11 (3:44-47).

12 6. Tsai differs from the claimed invention because Tsai does not
13 describe that the adhesive tie layer comprises a tackifier.

14 7. Kawachi describes an adhesive ethylene copolymer composition
15 comprising an ethylene/alpha-olefin copolymer and a tackifier. (3:1-18).

16 8. An object of Kawachi is to increase the adhesive strength of
17 adhesive ethylene copolymer compositions. (2:55-60).

18 9. Kawachi describes that an adhesive composition containing a
19 tackifier provides a layer having good adhesive force. (Abstract).

20 10. Kawachi describes that the tackifier is a solid amorphous polymer
21 useful in the field of adhesives. (18:59-61).

22 11. Kawachi describes that the preferred tackifiers have good
23 dispersability in the ethylene/alpha-olefin copolymers. (19:24-29).

24 12. Jing describes processes for preparing multilayer articles
25 featuring a fluoropolymer blend layer into tubing. (1:1-10; 9:28-36).

1 of the Kawachi invention was to obtain an adhesive composition having
2 high adhesive force between polymers. (*Id.* 4-5).

3 The Examiner then concluded that it would have been obvious to one
4 of ordinary skill in the art at the time the invention was made to use
5 Kawachi's adhesive composition comprising a tackifier and an
6 ethylene/alpha-olefin copolymer as an adhesive tie layer in Tsai's multilayer
7 film to obtain a film with increased adhesive strength between the
8 fluoropolymer layer and thermoplastic layer. (Non-Final Rejection, Apr. 6,
9 2006, p. 5).

10 The Appellants assert that the Examiner "improperly combined the
11 references" to reject claims 1-28 and 40-42 as being obvious. (App. Br. 7).
12 Specifically, the Appellants argue that "there is no teaching or suggestion in
13 either reference to combine the multilayer films disclosed by Tsai et al. with
14 the adhesive compositions described by Kawachi et al." (*Id.*; Reply Br. 2).
15 The Appellants further assert that Kawachi does not teach that its adhesive
16 compositions would be compatible with fluoropolymers nor that the
17 compositions would be sufficient to adhere fluoropolymer layers with other
18 polymeric layers. (App. Br. 7).

19 This argument is not persuasive. A reason to combine teachings
20 need not be expressly stated in any prior art reference. *In re Kahn*, 441 F.3d
21 977, 989 (Fed. Cir. 2006). There need only be an articulated reasoning with
22 rational underpinnings to support a reason to combine teachings. *Kahn*, 441
23 F.3d at 988. Here, the Examiner explained that the combination of Tsai with
24 Kawachi was suggested by the references and the knowledge of one with
25 ordinary skill in the art who reviewed the references.

1 Specifically, the Examiner found that Tsai describes a multilayer film
2 having a fluoropolymer layer, an adhesive tie layer, and a thermoplastic
3 polymer layer. Tsai expressly describes that the adhesive tie layer may be
4 comprised of the adhesive compositions described in Urawa. The Examiner
5 also found that Urawa describes adhesive compositions comprising an
6 ethylene/alpha-olefin copolymer.

7 Turning to Kawachi, the Examiner found that it also describes
8 adhesive compositions comprising an ethylene/alpha-olefin copolymer.
9 However, Kawachi's composition also contains a tackifier, known in the art
10 to provide good adhesive force to film layers.

11 From these facts, it is apparent that the Examiner rationally
12 determined that it would have been obvious for a person skilled in the art at
13 the time of the invention who reviewed Tsai, Urawa, and Kawachi to
14 substitute Urawa's ethylene/alpha-olefin adhesive composition with
15 Kawachi's ethylene/alpha-olefin adhesive composition containing a tackifier
16 for improved adhesive force.

17 That Appellant urges that Kawachi does not expressly describe the
18 compatibility or sufficiency of its composition with fluoropolymers. This (1)
19 misplaces the burden of proof, (2) is contrary to the weight of the evidence
20 of record, and (3) does not render the suggested combination nonobvious.

21 In rebutting the case of obviousness, the Applicant/Appellant may
22 come forth with persuasive evidence or argument that the combination is
23 improper, for reasons which may include "compatibility" or operativeness of
24 the combination. It is not the burden of the Examiner to establish
25 compatibility. We note that the Appellant has pointed to a mention in Jing
26 (6,849,314; 1:29-31) that ". . . fluoropolymers are known to be difficult to

1 bond.” Such a passing mention is insufficient to overcome the clear
2 preference of the combination of prior art.

3 For example, Tsai and Urawa provide clear teachings that
4 ethylene/alpha-olefin adhesive compositions are compatible with
5 fluoropolymers. Additionally, Kawachi describes that its tackifier is a
6 polymer that has good dispersability in the ethylene/alpha-olefin
7 copolymers. The Appellant has not sufficiently rebutted this evidence that it
8 would be within the understanding of one ordinarily skilled in the art that
9 compatibility/sufficiency teachings of Tsai and Urawa also apply to the
10 ethylene/alpha-olefin adhesive composition of Kawachi.

11 The Appellants next argue that the Examiner “has applied an
12 impermissible ‘obvious to try’ standard of patentability” by stating in the
13 Final Rejection that “[i]t is not unreasonable for one of ordinary skill to try a
14 polymer adhesive with all types of polymers, whether specifically mentioned
15 or not.” (App. Br. 7-8, quoting Final Rejection, Jul. 7, 2006, 3; Reply Br. 4).
16 The Appellants assert that the Examiner’s statement represents the kind of
17 error where,

18 what would have been ‘obvious to try’ would have been to vary
19 all parameters or try each of numerous possible choices until
20 one possibly arrived at a successful result, where the prior art
21 gave either no indication of which parameters were critical or
22 no direction as to which of many possible choices is likely to be
23 successful.

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25 (App. Br. 7)(quoting *In re O’Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988)).

26 This argument is without merit. The Appellants mischaracterize the
27 basis of the Examiner’s obviousness rejection by referencing a response
28 offered during the prosecution of their application. A close review of the

1 specifically recited grounds of the Examiner’s rejection reveals that the
2 Examiner does not rely on an “obvious to try” rationale in determining that
3 the claimed invention is obvious. (See Non-Final Rejection, Apr. 6, 2006,
4 pp. 4-5; see also Ans. 9).

5 Rather, the Examiner based the rejection upon the fact that Kawachi
6 teaches that a tackifier is a well known adhesion additive to ethylene/alpha-
7 olefin adhesive polymers, making it obvious to one of ordinary skill in the
8 art at the time of the invention to add a tackifier to the ethylene/alpha-olefin
9 adhesive polymer described by Tsai. (See Non-Final Rejection, Apr. 6,
10 2006, 4-5; see also Ans. 9). Therefore, the Examiner’s rejection did not rely
11 upon a skilled artisan arriving at the claimed invention by “vary[ing] all
12 parameters” of the prior art or “try[ing] each of numerous possible choices”
13 without direction.

14 Of note, we observe that the Appellants have not shown that the
15 addition of a tackifier in such an adhesive was not well known in the art.

16 In this same vein, the Appellants further assert that the applied
17 references do not provide one of ordinary skill a reasonable expectation of
18 success in achieving the claimed invention as “there is difficult[y] in
19 successfully bonding fluoropolymer layers to non-fluoropolymer film
20 layers.” (App. Br. 8).

21 This argument is also without merit. Again, the Appellants
22 incorrectly assume that the Examiner relied on an “obvious to try” rationale
23 for rejecting the claims. Further, Tsai overcame any “difficult[y] in
24 successfully bonding fluoropolymer layers to non-fluoropolymer film
25 layers” by applying an adhesive tie layer comprised of an ethylene/alpha-
26 olefin adhesive polymer. Arriving at the claimed invention, as discussed

1 supra, involved only the obvious step of adding a tackifier to the Tsai's
2 adhesive polymer. One ordinarily skilled in the art at the time of the
3 invention who reviewed Kawachi knew that a tackifier provides a layer
4 having good adhesive force and that preferred tackifiers have good
5 dispersability in the ethylene/alpha-olefin copolymers. (Kawachi Abstract,
6 19:24-29). This teaching, along with that of Tsai and Urawa provide a
7 reasonable expectation of success.

8 Consequently, we do not find error with the Examiner's rejection of
9 claims 1-28 and 40-42 as being obvious over the combination of Tsai,
10 Urawa, and Kawachi.

11 II. The Rejection of Claims 29 and 43 under 35 U.S.C. § 103(a)
12 over Tsai, Kawachi, and Jing.

13 Claims 29 and 43 stand rejected under 35 U.S.C. § 103(a) over
14 Tsai, Kawachi, and Jing. The representative claim, dependent claim
15 29, reads: "A tube formed from the multilayered film of claim 1."

16 As described in the rejection of claims 1-28 and 40-42, the Examiner
17 found that the combination of Tsai and Kawachi teach the limitations of
18 independent claim 1. (Non-Final Rejection, Apr. 6, 2006, p. 6). The
19 Examiner determined that Tsai and Kawachi do not describe forming the
20 multilayer film into a tube. (*Id.*). However, the Examiner determined that
21 Jing describes that it is well known in the art to form films containing
22 fluoropolymer layers into tubes to provide articles with chemical resistance
23 and low fuel permeation. (*Id.*). Therefore, the Examiner concluded that it
24 would have been obvious to one of ordinary skill in the art at the time the
25 invention was made to form the multilayer article of Tsai and Kawachi into a

1 tube as described by Jing because it was well known in the art that such a
2 tube provides chemical resistance and low fuel permeation. (*Id.* at 7).

3 The Appellants argue that the Examiner erred in rejecting claims 29
4 and 43 for the same reasons advanced for the rejections of 1-28 and 40-42
5 and assert that Jing “fails to overcome the differences between Tsai et al.
6 and Kawachi et al. and the claimed invention.” (App. Br. 9). Specifically,
7 the Appellants assert that Jing does not teach a “multilayer film comprising a
8 fluoropolymer layer being attached to a non-fluoropolymer layer via a non-
9 fluoropolymer containing adhesive tie layer,” and does not teach a “tie layer
10 including an ethylene/ α -olefin copolymer and a tackifier.” (App. Br. 9).

11 This argument is unpersuasive for the same reasons discussed
12 regarding the rejections of claims 1-28 and 40-42. Moreover, the
13 obviousness rejection of claims 29 and 43 cannot be overcome by attacking
14 Jing individually where the rejection is based upon the teachings of a
15 combination of references. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097
16 (Fed. Cir. 1986). It is the cited combination of Tsai, Kawachi, and Jing
17 which discloses all of the limitations of dependent claim 29. The Examiner
18 has only relied upon Jing to demonstrate that it is well known in the art to
19 form films containing fluoropolymer layers into tubes.

20 Finally, we are also unpersuaded insofar as the Appellants argues that
21 the cited references do not provide any suggestion to combine the multilayer
22 film of Tsai and Kawachi with the tube of Jing, or that such combination
23 results from “reconstructing the art in light of the Appellants’ disclosure.”
24 (App. Br. 9-10).

25 We have previously discussed that the Examiner’s reasoning for
26 combining Tsai and Kawachi is supported by the evidence. Similarly, it

1 would have been obvious to a person of ordinary skill in the art at the time
2 the invention was made to combine Tsai with Jing. Tsai describes a
3 multilayer film comprising a fluoropolymer layer and Jing describes forming
4 multilayer films featuring a fluoropolymer layer into a tube. Jing also
5 describes that the process of forming the film into a tube provides excellent
6 interlayer adhesion and allows the multi-layer articles to remain transparent.
7 Therefore, a skilled artisan would form the film of Tsai and Kawachi into
8 the tube of Jing to yield a multilayer article with excellent interlayer
9 adhesion and transparency.

10 Furthermore, as explained in *In re McLaughlin*, 443 F.2d 1392, 1395
11 (CCPA 1971), “Any judgment on obviousness is in a sense necessarily a
12 reconstruction based upon hindsight reasoning” Reconstruction is
13 proper if it relies on ordinary skill at the time of the invention and not on
14 knowledge gained solely from the applicant’s disclosure. *Id.*

15 Here, Jing teaches forming a multilayer film having a fluoropolymer
16 layer, as in the combination of Tsai and Kawachi, into a tube. The only
17 reconstruction performed relies upon an ordinary skill in the art at the time
18 of the invention to combine the tackifier of Kawachi with multilayer film of
19 Tsai and to then form the film into Jing’s tube. Therefore, we conclude that
20 the examiner did not err in determining that it would have been obvious to
21 one of ordinary skill in the art at the time of the invention to combine the
22 references to arrive at the claimed invention. Such a conclusion is not the
23 result of inappropriate hindsight.

24 Accordingly, we affirm the Examiner’s rejections.

1 CONCLUSION OF LAW

2 On the record before us, the Appellants have not shown error on the
3 part of the Examiner. It would have been obvious to one of ordinary skill in
4 the art at the time the invention was made to combine the known elements of
5 the prior art for their known functions.

6 DECISION

7 The Rejection of claims 1-28 and 40-42 under 35 U.S.C. § 103(a) as
8 being unpatentable over Tsai, Kawachi, and Urawa is AFFIRMED.

9 The Rejection of claim 29 and 43 under 35 U.S.C. § 103(a) as being
10 unpatentable over Tsai, Kawachi, and Jing is AFFIRMED.

11 No time period for taking any subsequent action in connection with
12 this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

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14 AFFIRMED

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