THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte DALE GROVE

_____

Appeal No. 96-3174
Application 07/970,608[1]

_____

ON BRIEF

_____

Before COHEN, STAAB and CRAWFORD, *Administrative Patent Judges*.

STAAB, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1]Application for patent filed October 8, 1992. According to appellant, this application is a continuation-in-part of Application 07/749,937 filed August 26, 1991, now abandoned.

This is a decision in an appeal from the examiner's final rejection of claims 1-20, all the claims in the application.[2]

Appellant's invention pertains to a method (claims 1-17) and an apparatus (claims 18-20) for forming an article from a molten plasticized resin using an injection molding machine. Independent method claims 1 and 10 are representative of the

[2]The present application, filed pursuant to 37 CFR § 1.62, purports to be a continuation-in-part application of parent application S.N. 07/749,937. As stated in the Manual of Patent Examining Procedure (MPEP) § 201.06(b) (6th ed., Rev. 2, July 1996, page 200-22), "[t]he original disclosure of an application filed under 37 CFR 1.62 will be the original parent application, amendments entered in the parent application, and amendments filed on the filing date and referred to in the oath or declaration by the inventor(s)." In the present instance, a 37 CFR § 1.116 amendment originally submitted on September 4, 1992 (Paper No. 6) in the parent application, has been entered in the present application as a preliminary amendment (Paper No. 11). However, this amendment was not entered in the parent application and was not referred to in the declaration filed on the filing date of the present application. In light of these circumstances, appellant should take whatever steps he deems appropriate in order to avoid possible questions of lack of descriptive support in the original disclosure (i.e., "new matter") for the changes to the claims effected by the previously unentered 37 CFR § 1.116 amendment originally submitted in the parent application, and now entered in the present application as a preliminary amendment.

appealed subject matter and copies thereof, as they appear in Appendix A of the appeal brief[3], are appended to this opinion.

The single reference of record relied upon by the examiner in support of rejections under 35 U.S.C. § 102(b) and 35 U.S.C.
§ 103 is:

Maus et al. (Maus) 4,828,769 May 9, 1989

The following rejections are before us for review:

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[3]The present application contains no less than three appeal briefs. A first brief (Paper No. 19) was submitted on March 22, 1995 and was found to be in non-compliance with 37 CFR § 1.192(c) for various reasons. See the notification of non-compliance mailed April 28, 1995 (Paper No. 20). A second brief (Paper No. 21), entitled "New Complete Appeal Brief," was submitted on May 31, 1995 and was also found to be in non-compliance with 37 CFR
§ 1.192(c). See the notification of non-compliance mailed November 3, 1995 (Paper No. 22). There followed a third brief (Paper No. 25), entitled "Second New Complete Appeal Brief," submitted on or about December 5, 1995. Subsequently, the second notification of non-compliance was found to be in error. See page 1 of the answer mailed January 22, 1996 (Paper No. 24). Accordingly, like the examiner, we will consider the second brief (Paper No. 21) as a properly filed appeal brief. Any reference to "the brief" in this decision should be understood as referring to the second brief (Paper No. 21), i.e., the "New Complete Appeal Brief."

a) claims 17 and 18, rejected under 35 U.S.C. § 112, second paragraph,

b) claims 1-20, rejected under 35 U.S.C. § 112, first paragraph,

c) claims 1, 2, 5 and 7, rejected under 35 U.S.C. § 102(b) as being anticipated by Maus, and

d) claims 3, 4, 6, and 8-20, rejected under 35 U.S.C. § 103 as being unpatentable over Maus.

The 35 U.S.C. § 112, second paragraph, rejection

In rejecting claim 17 under 35 U.S.C. § 112, second paragraph, the examiner considers that claim 17 is inconsistent with claim 10, from which it depends. Specifically, the examiner maintains that the injecting step of claim 17 calling for injecting plasticized resin "to completely fill said pre-enlarged mold cavity" is inconsistent with the injecting step of claim 10, which calls for injecting into each pre-enlarged mold cavity a volume of plasticized resin "insufficient to fill each pre-enlarged cavity."

From our perspective, claim 17 does not merely impose a further qualification on claim 10 by requiring that the

insufficiently filled cavity of claim 10 be completely filled, as argued by appellant on page 6 of the brief. Rather, claim 17 imposes a totally different requirement on the claim 10 method, which requirement is inconsistent with the injecting step previously required by claim 10. Accordingly, the metes and bounds of claim 17 cannot be determined with any reasonable degree of certainty since it cannot be determined whether claim 17 calls for an injecting step that results in insufficient filling of the mold cavity or complete filling of the mold cavity. It follows that we will sustain the standing § 112, second paragraph, rejection of claim 17.

Turning to the standing § 112, second paragraph, rejection of claim 18, the examiner states:

> Claim 18 is rejected . . . as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 18, as most recently amended by the amendment of August 1, 1994, in line 12, reads as follows: "contact of said frame with the of said mold members", such that "with the of said mold members" is confusing. [answer, page 6]

Appellant, however, contends that "claim 18 is believed to be in accordance with Appendix A [of the brief] and does

not contain the language to which the objection has been made" (brief, page 6).

Having carefully reviewed the record of the present application, we find that claim 18 was most recently amended by the amendment submitted on August 1, 1994 (Paper No. 16), which amendment contained the following directive:

> Claim 18, line 10, delete "are"; line 11, *delete "the";* line 12, *after "the" delete "other";* line 16, change "the" to --a--, and insert --mold-- before "cavity". [emphasis added]

As a result of this amendment, the whereby clause at the end of paragraph (b) of claim 18 now reads "whereby said oversized mold cavity is formed by contact of said frame with the of said mold members;". In that appellant is incorrect in his belief that claim 18 does not contain the language found objectionable by the examiner, and in that appellant has not otherwise disputed the examiner's determination that the claim 18 as written is confusing, we are constrained to sustain the standing § 112, second paragraph, rejection of claim 18. We note, for completeness sake, that we are in agreement with the examiner's position that the claim terminology in question is vague and indefinite to the extent that the recitation "with

the of said mold members" appearing in the whereby clause of paragraph (b) is confusing.

The 35 U.S.C. § 112, first paragraph, rejection

In rejecting claims 1-20 under the first paragraph of 35 U.S.C. § 112, the examiner maintains that "[t]he original claims, specification, and abstract lack a full, clear, concise, and exact disclosure of how the compression of the resin takes place simultaneously with the injection of the resin" (answer, page 5). It is apparent from this statement that the examiner's rejection is based on an alleged failure of the original disclosure to comply with the enablement requirement, as opposed to the description requirement, of the first paragraph of 35 U.S.C.
§ 112.[4]

The test for enablement is whether the disclosure, as filed, is sufficiently complete to enable one of ordinary skill in the art to make and use the *claimed* invention without

[4]The description requirement found in the first paragraph of § 112 is separate from the enablement requirement of that provision. *See Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1560-64, 19 USPQ2d 1111, 1114-17 (Fed. Cir. 1991).

undue experimentation. *See In re Scarbrough*, 500 F.2d 560, 566, 182 USPQ 298, 302 (CCPA 1974). At the outset, we observe that claims 10-14, 16 and 17 do not require that the compression of the resin takes place simultaneously with the injection of the resin. Thus, it is not clear how the examiner's concerns regarding enablement are relevant to these claims.

With respect to the remaining claims, independent claim 1 and the claims that depend therefrom require the step of applying force to the mold members to reduce a volume of the mold cavity and compress the resin therein simultaneously with the injection of the resin, independent claim 18 and the claims that depend therefrom require means for applying force to the mold members to pressurize the resin therein simultaneously with the injection of resin, and claim 15, which depends from claim 10, requires that the force applying step comprises simultaneously compressing and injecting the resin.

Turning to appellant's disclosure, the specification, as originally filed, states that "[s]imultaneously with the injection of melt, pressure is applied to reduce the volume of

the closed mold cavity and redistribute the resin within the mold. This compresses the resin, which solidifies" (page 17, last paragraph).

We believe that one of ordinary skill in the art would appreciate from this statement that the act of redistributing the plasticized resin melt within the mold cavity involves "compressing" the resin in the sense that a compressive force is applied thereto to bring about redistribution. Consistent with the well established principle that claim language must be read in light of the specification,[5] we consider that the words "compress" (claim 1, paragraph (c)), "compressing" (claim 15), and "pressurize" (claim 18, line 18) cover applying a compressive force to the plasticized resin melt, such that the claim language questioned by the examiner encompasses within its metes and bounds the act of applying a compressive force to the melt as it is being injected to redistribute the melt in the mold cavity. Given this interpretation, it is our view that one of ordinary skill in the art would have no difficulty in adjusting the timing of

[5]*In re Prater,* 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969).

the force applying and injecting steps of appellant's method so that the melt is redistributed as it is being injected, thereby resulting in simultaneously compressing and injecting the resin, as now claimed.

In light of the foregoing, we will not sustain the standing 35 U.S.C. § 112, first paragraph, rejection of claims 1-20 as being based on a nonenabling disclosure.

For completeness sake, we make the following observations regarding the examiner's and appellant's argued positions regarding enablement. It appears from the record that appellant is of the opinion that the Maus reference applied by the examiner against the claims differs from appellant's invention because in Maus the oversized mold cavity is only partly filled with melt before injection is completed, whereas in appellant's invention the oversized mold cavity is completely filled with melt before injection is completed. According to appellant, "[b]ecause of this difference, the present invention can achieve simultaneous injection and compression, while Maus does not" (brief, page 13). In calling into question the enablement of appellant's claims, the examiner has repeatedly questioned this above-stated

position. In particular, the examiner maintains that (1) appellant's arguments and declarations are not commensurate in scope with the appealed claims because the claims do not require that the oversized mold cavity be completely filled with melt before injection is completed, and (2) it is not clear that appellant's argued position can be supported by the original disclosure.

It is questionable whether appellant's opinion regarding alleged differences in operation of the present invention vis-à-vis Maus has any relevance to the § 112, first paragraph, question of enablement of the invention as presently claimed. As is made clear by our discussion above, it is our position that (1) the simultaneous compressing (or pressurizing) and injecting language of claims 1-9, 15 and 18-20 encompasses the act of applying a compressive force to the melt as it is being injected to redistribute the melt in the mold cavity, and (2) the original disclosure provides an enabling disclosure for this type of simultaneous compressing and injection. This being the case, it is immaterial whether the present disclosure also provides support for appellant's argument that

the oversized mold cavity of appellant's apparatus is completely filled with melt before injection is completed.

The 35 U.S.C. § 102(b) rejection

Turning to the anticipation rejection of claims 1, 2, 5 and 7, independent claim 1 calls for the step of forming an oversized mold cavity with respect to an opposing pair of relatively movable mold members, and the step of applying force to said mold members to reduce a volume of the mold cavity and compress the plasticized resin therein simultaneously with the injection of the resin.

Maus discloses two alternative modes of utilizing a variable volume mold cavity to mold an article. In each case, a pair of relatively movable mold platens (e.g., elements 82, 90) are first brought together in a so-called "soft" clamp-up condition to close a parting line of a mold cavity (column 13, lines 42-48; Figure 4). In the first alternative mode, after the "soft" clamp-up condition is achieved, injection of resin commences and movable platen 90 moves toward stationary platen 82 through a pre-set stroke length to reduce the volume of the mold cavity from its "soft-close" volume to a final "full-

clamp-up" volume (column 13, lines 62-68; column 27, lines 7-53; Figures 5 and 6). In the second alternative mode, a mold plate (e.g., element 74) "floats" relative to its platen such that, after the "soft" clamp-up condition is achieved, injected mold resin enters the mold cavity and melt pressure drives the floating mold plate backwards to enlarge the mold cavity against a minimal deflection force required to displace the floating mold plate (column 14, lines 1-7; column 29, lines 3-23).

At the outset, it is readily apparent that the second "floating" alternative mode does not anticipate claim 1. This is so because any minimal compression force that might be applied to the resin by the floating plate during injection in the "floating" alternative mode occurs as the mold cavity *increases* in volume from the initial "soft-close" volume. In contrast, step (c) of claim 1 calls for applying force to the mold members to *reduce* a volume of the mold cavity and compress the resin simultaneously with injection.

As to Maus' first alternative mode, the reference discusses several schemes for coordinating the injection and

compression steps of the mold process. Specifically, Maus states:

> The onset of movable platen compressive clamping force stroke can be alternatively controlled by time; by the position of the reciprocating-injecting screw of unit 101; or by a pressure sensor mounted in the mold, for example. Of these, clamping triggering control on the basis of time is probably the least precise. Control based on time is also of an "open loop" nature. Cavity pressure triggering of clamping compression also requires that the injected melt volume exceed the enlarged cavity volume. This results in a pressurization of the molten polymer up to the preset cavity pressure level. This last phase of cavity fill against increasing pressures, however, produces undesirable molded-in stresses in the molded optical plastic part. [column 27, line 56 through column 28, line 2]

With respect to controlling movement of the movable platen by time, Maus is silent as to whether or not compressive clamping force is applied simultaneously with injection. Accordingly, this control scheme does not provide a basis for an anticipation rejection of claim 1. As to controlling movement of the movable platen according to cavity pressure, while the resin would certainly undergo pressurization or compression simultaneously with injection according to this control scheme, such pressurization or compression is not achieved "by applying force to said mold

members to reduce a volume of the mold cavity and compress said plasticized resin therein," as called for in step (c) of claim 1. Accordingly, this control scheme also does not provide a basis for an anticipation rejection of claim 1.

We are left with Maus' third scheme for controlling movement of the movable platen, i.e, by the position of the injecting screw of the resin melt injecting unit, as a possible basis for anticipation. With respect to this control scheme, the examiner points to several portions of the Maus disclosure, which, according to the examiner, establish that Maus' third scheme for controlling movement of the movable platen results in applying force to reduce a volume of the mold cavity and compress the resin simultaneously with injection, as called for in step (c) of appealed claim 1. These include: column 14, lines 22-29 ("The compression portion of the molding cycle is initiated off of sensors (preferably, screw position) even before the screw has actually completed its travel and before subsequent full delivery of the pre-determined injection volume . . . shot size is completed"); column 19, lines 32-34 ("such is exactly the case in preferred embodiments of the present invention,

whereby compressive clamping force and motions commence before rapid injection fill is completed"); and, column 35, lines 14-18 ("applying the main clamp force of the injection molding machine before completion of said injection, so as to reduce the volume of the mold cavity"). In addition, we also note column 17, lines 23-26 ("when transducer 67a signals the melt has nearly been completely delivered to the mold cavities, the compression portion of the process is commenced").

In responding to this rejection, appellant notes column 28, lines 15-22 of Maus, which, in pertinent part, reads:

> Once the injection unit 101 has delivered the precisely predetermined volume of melt which corresponds to that screw position on transducer 67a which triggers the start of clamping compression, the control system 88 causes cylinder 80b (in the preferred embodiment) to elongate, thereby advancing movable mold platen 90 towards stationary mold platen 82.

According to appellant, this disclosure establishes that the compression phase of Maus does not start until after the completion of injection.

The issue here is whether Maus discloses applying a force to the mold members to reduce the volume of the mold cavity and compress, as by redistributing, the resin in the mold

cavity simultaneously with resin injection. Upon careful review of the entire disclosure of Maus, it is our conclusion that there is no clear disclosure in Maus to this effect. With respect to the above quoted portions of the Maus disclosure pointed out by the examiner, initiating the compression portion of the molding cycle prior to the completion of injection, as described, for example, in column 14, lines 22-29, could perhaps result in applying a compressing force to the resin already in the mold cavity, but this circumstance does not necessarily result. Notwithstanding the examiner's implied position to the contrary, without a more complete description of Maus' molding cycle, it is simply not possible to discern precisely what happens to the resin melt already in the mold cavity upon commencing the compression portion of the mold cycle before the completion of injection. In this regard, it is possible that initializing the compression portion of the cycle before full delivery of the resin results merely in displacing any void volume or gas in the oversized mold cavity, as occurs during the initial portion of the faster phase of Maus' multi-stage compression (column 14, lines 35-51; column 28, lines

28-44). This interpretation is consistent with the statement in Maus, at column 31, lines 64-66, that "[i]mmediately *after* injection and while the cavities' molten plastic is very hot and mobile, the first stage of clamp-actuated profiled compression starts" (emphasis added).

It is well established that anticipation cannot be predicated on an ambiguous reference. *In re Turlay*, 304 F.2d 893, 899, 134 USPQ 355, 360 (CCPA 1962). In the present instance, Maus is ambiguous as to the timing of the resin compression and injection steps required to satisfy step (c) of claim 1. Accordingly, we shall not sustain the standing § 102 rejection of claims 1, 2, 5 and 7 based on Maus.

The 35 U.S.C. § 103 rejection

Considering next the § 103 rejection of claims 3, 4, 6, 8 and 9 as being unpatentable over Maus, each of these claims through their dependency on claim 1, calls for the step of applying force to reduce a volume of the mold cavity and compress the resin simultaneously with injection. As noted in our discussion above of the standing § 102 rejection, Maus is

ambiguous as to this claim requirement. In addition, it is not apparent to us, and the examiner has not persuasively pointed out, where Maus suggests modifying the timing of the compression stroke step and injection step to accomplish step (c) of claim 1, such that the claimed method as a whole would have been obvious to one of ordinary skill in the art. In this regard, the mere fact that the prior art method of Maus could be modified in a manner which would result in the claimed method does not make such modification obvious unless the prior art suggests the desirability of doing so. *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). We therefore shall not support the examiner's § 103 rejection of claims 3, 4, 6, 8 and 9 as being unpatentable over Maus.

As to method claims 10-17, independent claim 10 in paragraph (c) calls for the step of commonly and simultaneously applying a main clamp force of the injection molding machine "before commencement of said injection. . . ." In support to her § 103 rejection of these claims, the examiner has taken the position that "the overall process of

Maus . . . is practically identical to appellant's disclosure" (answer, page 12) and that "the timing of the application of force would have been readily determined through routine experimentation by one having ordinary skill in the art at the time of appellant's invention based upon the other variable process parameters and conditions" (answer, page 11-12).

Rejections based on 35 U.S.C. § 103 must rest on a factual basis. *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). In making such a rejection, the examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *Id*. In the present case, the examiner has failed to advance any factual basis to support the conclusion that it would have been obvious to one of ordinary skill in the art to modify Maus in a manner which would result in the method of claim 10. Again, the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art

suggested the desirability of the modification. *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127 (Fed. Cir. 1984)). Maus contains no such suggestion. Accordingly, we shall not sustain the standing § 103 rejection of claim 10, or of claims 11-17 which depend therefrom, as being unpatentable over Maus.

Independent claim 18 is directed to an apparatus for forming an article from molten resin comprising, inter alia, first and second mold members supported by first and second platen members, with both of said mold members surrounded by a relatively movable frame, whereby the oversized mold cavity is formed by contact of said frame with one of the mold members.[6]

Maus discloses in Figures 2-8, for example, a first mold member 5a, 70 and a second mold member 5b supported, respectively, by first and second mold platens 82, 90. Maus further discloses a relatively movable frame 74 surrounding

[6]As noted above, the whereby clause at the end of paragraph (b) of claim 18 is the subject of a rejection under 35 U.S.C.
§ 112, second paragraph, for indefiniteness. For purposes of rendering a decision of the merits of the standing § 103 rejection of this claim, we interpret the "whereby" clause at the end of paragraph (b) of claim 18 as reading "whereby said oversized mold cavity is formed by contact of said frame with one of said mold members."

the mold member 5b. When the platens 82, 90 are moved towards each other, relatively movable frame 74 engages portion 70 of the first mold member to define, with the mold members, a mold cavity. Unlike that which is called for in claim 18, however, the relatively movable frame 74 of Maus does not appear at any time to surround both of the mold member 5b and the mold member 5a, 70.

In support of the standing § 103 rejections based on Maus, the examiner states on page 11 of the answer that

> appellant's instantly claimed injection molding apparatus was *generally* well known and conventional in the art at the time of appellant's invention, and was *mostly* illustrated by Maus et al . . . except for specifically referring to the mold members being surrounded by a relatively movable frame . . . . But this type of mold orientation was *generally* well known and conventional in the art at the time of appellant's invention. [emphasis added]

Based on these allegedly well known and conventional constructions in the prior art, the examiner implies that the subject matter of claim 18 would have been obvious.

We cannot support this implied position. As with the other § 103 rejections based on Maus, the examiner has again failed to supply the requisite factual basis to support a conclusion that it would have been obvious to one of ordinary

skill in the art to modify Maus in a manner which would result in the claimed subject matter. Specifically, the examiner has not explained, and it is apparent to us, where Maus teaches or suggests providing Maus with a movable frame that surrounds both of the mold members, as called for in paragraph (b) of claim 18. Accordingly, we shall not sustain the standing § 103 rejection of claim 18-20 based on Maus.

Summary

The rejection of claims 17 and 18 under 35 U.S.C. § 112, second paragraph, is affirmed.

The rejection of claims 1-20 under 35 U.S.C. § 112, first paragraph, is reversed.

The rejections of claims 1-20 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103 based on Maus are reversed.

The decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

IRWIN CHARLES COHEN Administrative Patent Judge)	)	
LAWRENCE J. STAAB Administrative Patent Judge)	)	BOARD OF PATENT APPEALS AND INTERFERENCES
MURRIEL E. CRAWFORD Administrative Patent Judge)	)	

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APPENDIX

1. A method of forming an article having a prescribed volume and mass from a molten plasticized resin using an injection molding machine, comprising the steps of:

(a) forming an oversized mold cavity with respect to an opposing pair of relatively movable mold members of said injection molding machine between which mold members said article is formed;

(b) injecting into said oversized mold cavity a volume of plasticized resin exceeding the prescribed volume of the article to be formed and having a mass at least equal to the prescribed mass of the article;

(c) applying force to said mold members to reduce a volume of said mold cavity and compress said plasticized resin therein simultaneously with the injection of said resin thereby to form said article.

10. A method of forming a plurality of articles from a molten plasticized resin using an injection molding machine having first and second mold platens, first and second mold members, each having a corresponding plurality of mold structures, comprising:

(a) forming a plurality of pre-enlarged mold cavities by adjusting relative positions of opposing mold members, at least one of which is capable of movement relative to the other, said mold cavities having dimensions determined by distance between the platens, and said members initially being separated to form pre-enlarged cavities with volumes each greater than a maximum volume occupied at atmospheric pressure by the molten plasticized resin to be injected into the cavity, thereby to receive plasticized resin without introducing back pressure;

(b) injecting into each pre-enlarged mold cavity a volume of plasticized resin larger than a volume of the article to be formed but insufficient to fill each pre-enlarged cavity;

(c) commonly and simultaneously applying a main clamp force of the injection molding machine before commencement of said injection to reduce the volumes of the mold cavities and fill the reduced volume mold cavities while venting gases; and

(d) maintaining the applied main clamp force until a final clamp lock-up position is reached, thereby compressing the resin until slight excess is forced into a pressure relief outlet and the resin solidifies.