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(2) is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* REINHOLD MEIER  
and KARL KERGER-KNILLING

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Appeal No. 1996-1897  
Application 08/064,145<sup>1</sup>

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HEARD: December 7, 1999

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Before WARREN, WALTZ and LIEBERMAN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

*Decision on Appeal*

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 12 through 14 and 16 through 29, which are all of the claims in the application. Claim 12 is illustrative of the claims on appeal:

12. A form-fitting cast-on enclosure arrangement having parallel chucking surfaces for fixing an irregularly contoured metal workpiece for processing, comprising a plastic material enclosure having

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<sup>1</sup> Application for patent filed May 17, 1993. According to appellants, this application is a national stage application under 35 U.S.C. § 371 of PCT/EP92/01796, filed August 7, 1992.

several spaced apart ribs connected along a surface of said metal workpiece through webs;

wherein the ribs and the webs have cross-sectional surfaces of approximately the same size; whereby a crack-free enclosure is formed.

The appealed claims as represented by claim 12<sup>2</sup> are drawn to a crack-free plastic material enclosure having parallel chucking surfaces for fixing an irregularly contoured metal workpiece for processing comprising at least several spaced apart ribs connected along a surface of the workpiece through webs wherein the ribs and the webs have cross-sectional surfaces of approximately the same size. The plastic material enclosures can be formed around the workpiece by injection molding and can be separated from the workpiece by cooling to form shrinkage cracks in the enclosure.

The references relied on by the examiner are:

Wendt	2149328	Jun. 12, 1985
(published UK Patent Application, United Kingdom)		
Mushardt et al. (Mushardt)	2166070	Apr. 30, 1986
(published UK Patent Application, United Kingdom)		

The examiner has rejected appealed claims 26 and 27 under 35 U.S.C. § 102(b) as being anticipated by Wendt. The examiner has also rejected appealed claims 12 through 14 and 16 through 29 under 35 U.S.C. § 103 as being unpatentable over Mushardt in view of Wendt. We reverse the ground of rejection under § 102(b) and affirm the ground of rejection under § 103.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' brief for a complete exposition thereof.

#### *Opinion*

We begin our consideration of the issues in this appeal by determining the invention encompassed by the appealed claims 12, 13, 20, 23 and 25 through 29 as they stand before us, mindful that we must give the broadest reasonable interpretation to the terms of the appealed

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<sup>2</sup> Appellants state in their brief (page 4) that the appealed claims "do not stand or fall together" but provide separate argument with respect to the ground of rejection under 35 U.S.C. § 103 only with respect to claims 12, 28, 29, 20, 25, 26 and 27 as well as claims 13 and 14 and claims 23 and 24 (pages 5-11). Thus, we consider claims 16 through 19, 21 and 22 as standing or falling with claim 12. Accordingly, we decide this appeal with respect to this ground of rejection based on appealed claims 12, 13, 20, 23 and 25 through 29. 37 CFR § 1.192(c)(7) (1995).

claims consistent with appellants' specification as it would be interpreted by one of ordinary skill in this art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997) (“[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.”).

We consider the meaning of a number of terms which issues were also addressed in the course of argument at oral hearing. We first consider the term “a plastic material” which appears in claims 12 and 26 through 29 and which is further limited by the term “thermoplastic” in claims 13 and 26. We find from appellants' specification as it would be interpreted by one of ordinary skill in this art that these terms would have their ordinary meaning in the art such as that set forth in *The Condensed Chemical Dictionary Tenth Edition* (page 821; italics supplied)<sup>3</sup>:

**plastic. . . .**

(2) A high polymer, usually synthetic, *combined with* other ingredients, such as curatives, *fillers, reinforcing agents*, colorants, plasticizers, etc.; the mixture can be formed or molded under heat and pressure in its raw state, and machined to high dimensional accuracy, trimmed and finished in its hardened state. The *thermoplastic* type can be resoftened to its original condition by heat; the thermosetting type cannot.

Plastics in general (including all forms) are sensitive to high temperatures . . . Other types are combustible when exposed to flame for a short time (polyethylene, acrylic polymers, polystyrene) . . .

Engineering plastics are those to which standard metal engineering equations can be applied; they are capable of sustaining high loads and stresses, and are machinable and dimensionally stable. They are used in construction, as machine parts, automobile components, etc. Among the more important are nylon, acetals, polycarbonates, ABS resins, PPO/styrene, and polybutylene terephthalate.

. . . Plastics may be shaped by either compression molding . . . or injection molding (ejection of a measured amount of material into a mold in liquid form). The latter is more generally used, and articles of considerable size can be produced. . . .

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<sup>3</sup> Gessner G. Hawley, New York, Van Nostrand Reinhold Company. 1981.

On this basis, we find that one of ordinary skill in this art would interpret the term “a plastic material” and the term “thermoplastic” to include polymers which contain fillers that can be reinforcing agents. *Morris*, 127 F.3d at 1055-56, 44 USPQ2d at 1029 (“Absent an express definition in their specification, the fact that appellants can point to definitions or usages that conform to their interpretations does not make the PTO’s definition unreasonable when the PTO can point to other sources that support its interpretation.”). Furthermore, we point out that, as a matter of general claim construction principles, the art recognized meanings of the terms “a plastic material” and “thermoplastic” are not affected by the transitional phrases “comprising,” as in claims 12 and 13, and “consisting of,” as in claim 28. These transitional terms respectively “open” and “close” a claim with respect to whether it can contain, *inter alia*, an additional material *other* than that expressly stated and thus have no effect on the *content* of an expressly stated material. *See generally, Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) (“The claimed composition is defined as comprising - meaning containing at least - five specific ingredients.”); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) (The term “consisting of . . . [closes] the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith.”). We find no disclosure in appellants’ specification which would require a different result.

The other terms requiring consideration are “ribs” and “webs” which appear in the appealed claims in such phrases as “several spaced apart ribs connected along a surface of said metal workpiece through webs,” in claim 12, and “several spaced apart ribs connected through webs,” in claim 26. In oral argument, appellants took the position that the terms “ribs” and “webs” are used in their specification and claims with the common meaning associated with the terms. We agree because we find that one of ordinary skill in this art would interpret “ribs” and “webs” in light of appellants’ specification, wherein it is disclosed that “ribs **6** . . . are kept at a distance from one another by webs **7** and **8**” (page 7), to be consistent with the ordinary dictionary meaning of “rib” and “web” as found in

*The American Heritage Dictionary Second College Edition* (pages 1060 and 1370)<sup>4</sup>:

**rib** . . . **n.** . . . 2. A part or piece similar to a rib and serving to shape or support: *the rib of an umbrella*. . . . 6. *Archit.* **a.** An arch or a projecting arched member of a vault. **b.** One of the curved pieces of an arch. . . . .

**web** . . . **n.** . . . 8. *Archit.* The surface between the ribs of a ribbed vault. 9. A metal sheet or plate connecting the heavier sections, ribs, or flanges of any structural element. 10. A thin metal plate or strip, as the bit of a key or the blade of a saw. . . . .

Thus, we find that one of ordinary skill in this art would interpret the term “rib” in light of appellants’ specification to mean a piece “similar to a rib” which provides support since it serves as a “chucking surface,” thus reasonably suggesting a flat rather than arched surface, as shown in specification FIGs. 1-3, in a manner which supports the enclosed workpiece with respect to the chuck which holds the workpiece to the machine tool or tools (e.g., page 7). We further find that this person would further interpret the term “web” in light of appellants’ specification to mean the surface between the “ribs.” The term “several” in these phrases would be considered by one of ordinary skill in this art to have its common dictionary meaning of “more than two or three but not many” as defined in, e.g., *The American Heritage Dictionary Second College Edition* (page 1123; *see supra* note 4).

Accordingly, we find that, depending on the language of the particular claim, the claimed plastic material enclosures, having parallel chucking surfaces for fixing an irregularly contoured metal workpiece for processing, comprise (claims 12 through 14, 16 through 25 and 29) or consist of (claim 28) at least four spaced apart ribs, that provide support as “chucking surfaces,” which are connected by webs. The ribs and webs are made of a polymer material, that can contain fillers which are reinforcing agents (claims 12, 16 through 25, 28 and 29), such as a thermoplastic (claim 13) which can be polystyrene containing reinforcing fillers (claim 14), and have cross-sectional surfaces of approximately the same size (claims 12 through 14, 16 through 25 and 29), with the resulting enclosure being crack-free (claims 12 through 14 and 16 through 25). The workpiece can be “a power unit blade device” having leading and trailing edges at least partially enclosed by webs of the enclosure (claim 20) in which the distance between the ribs can be smaller at the blade base and/or tip than in the

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<sup>4</sup> Boston, Houghton Mifflin Company. 1982.

center (claim 23) and the distance between the center ribs can be larger than twice the rib thickness (claim 25). The workpiece located between the ribs can be completely enclosed by the crack-free plastic material enclosure (claims 12 through 14, 16 through 25, 28 and 29; see particularly claims 18 and 19<sup>5</sup>). The plastic material enclosures can be formed around the workpiece by injection molding (claim 26) and can be separated from the workpiece by cooling to form shrinkage cracks in the enclosure (claim 27).

Turning now to the ground of rejection under § 103, we have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the examiner that the claimed plastic material enclosures having parallel chucking surfaces for fixing an irregularly contoured metal workpiece for processing, and processes of making the plastic material enclosures and separating it from a workpiece, encompassed by appealed claims 12, 13, 20, 23 and 25 through 29, as we have construed these claims above, would have been obvious over the combined teachings of Mushardt and Wendt to one of ordinary skill in this art at the time the claimed invention was made.

We find from Mushardt and Wendt that it was well known in the prior art to fix irregularly contoured metal workpieces in an enclosure that covers at least a portion of the workpiece in order to secure that workpiece to a machine tool for processing, e.g., by clamping to a grinder, wherein the supporting enclosure has “a shape which is particularly suitable for convenient manipulation in a . . . machine tool . . . [and in which] sensitive parts of a workpiece which need not be treated by material removing tools are shielded” (Mushardt, e.g., page 1, lines 7-41; see also, e.g., page 1, line 122, to page 2, line 16), such that the enclosed workpiece “can be readily secured to existing workholders” in machine tools in a “stress-free and deformation-free” manner (Wendt, e.g., page 1, lines 6-57; see also, e.g., page 2, lines 113-119). The enclosed workpieces exemplified in these references are “turbine blades” which can be in single or multi-blade configurations (Mushardt, e.g., page 1, lines 60-61; an enclosed “twin blade” is shown in

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<sup>5</sup> Claims 18 and 19 are substantial duplicates because claim 19 was amended to depend on claim 12 in the amendment of March 30, 1994 (Paper No. 8). In the event that these claims are held to be allowable, see Manual of Patent Examining Procedure § 706.03(K) Duplicate Claims (7th ed., July 1998; 700-37).

Mushardt FIG. 1), which “turbine blades” constitute “a power unit blade having a blade with a leading edge, trailing edge, blade axis, blade base, blade tip and blade center” as specified in appealed claim 20.

We find that Mushardt states the following with respect to enclosing a workpiece (page 2, lines 82-108; emphasis supplied):

One feature of the invention resides in the provision of a cast fixture or jog which consists of meltable material and serves to hold and clamp composite workpieces, particularly workpieces including twin turbine blades and defining internal compartments. The improved fixture comprises a *plurality of spaced-apart components in the form of walls* or the like which define a space for a selected portion of a composite workpiece, and a *connector* (e.g., a connector consisting of *two or more spaced-apart ribs or webs*) which *connects the compartments* to each other in such a way that the *compartment is a least substantially free of meltable material* of the fixture. If the workpiece which is disposed in the space defined by the components of the fixture has one or more undercut portions (e.g., in the regions of the edges of turbine blades or in the regions where the blades are connected to each other by portions of the inner and outer vane rings) which are adjacent to the components, the mutual portions of the components and of the web or webs of the connector are selected in such a way that each undercut portion is at least substantially free of meltable material of the fixture.

Mushardt exemplifies this concept with the following embodiment (page 4, lines 38-103; emphasis supplied):

FIGS. 1 to 6 show a fixture or jig **6** for holding a composite workpiece including two spaced-apart (outer and inner) [turbine] blades **1, 2** . . . [which] are integrally connected with an inner ring segment **3** and an outer ring segment **4** . . . [that] together define a compartment **12**. The fixture **6** comprises *two spaced apart components or walls* **7** and **8** and a *connector including two spaced apart ribs or webs* **9, 11** each of which is integral with the components **7** and **8**. The components **7** and **8** are outwardly adjacent to the blades **1** and **2** (see particularly FIGS. 2 and 4) so that the component **7** is *adjacent* to the convex outside of the outer blade **1**, and the component **8** is *adjacent* to the concave outer side of the inner blade **2**. The *webs* **9** and **11** *extend into the compartment* **12** but the *remainder* of this compartment [**12**] is *devoid* of the material of the fixture **6**. The compartment **12** is also *devoid* of the material of the fixture **6** in the *regions* of the *front and rear edges* **13, 14** of the blade **1** as well as in the regions of the *front and rear edges* **16, 17** of the blade **2** (FIGS. 2 and 4). . . . The workpiece is normally treated by *one or more* grinding wheels or by other suitable tools, in the regions of its *segments* **3** and **4**, i.e., the tool or tools remove material from those portions of the workpiece *which are not confined in the fixture* **6**. An advantage of the feature that the compartment **12** extends all the way to the edges **13, 14** and **16, 17** of

the blades **1** and **2** is that such edges are highly unlikely to be damaged while the fixture **6** is being broken up to allow for the removal of the treated workpiece.

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The improved fixture renders it possible to manipulate workpieces in a grinding machine or another machine tool in a manner which would not be possible were the workpieces clamped directly in the work holder of the machine tool. A workpiece can be properly held and/or its orientation changed without coming into contact with any parts of the machine tool save for the material removing implement or implements.

For completeness, we note that included in the above passage from Mushardt is the following disclosure of a feature of the metal enclosure disclosed in this reference to be necessary for the removal of the metal enclosure from the workpiece after processing (page 4, lines 64-74; see also, e.g., page 2, lines 43-50, and page 3, lines 10-100):

Each of the webs **9**, **11** is provided with one rated break point **10** so as to allow for predictable disintegration of such webs when the workpiece is to be removed from the fixture **6** upon completion of the material removing treatment in a machine tool, particularly in a grinding machine. When the webs **9**, **11** are broken at the points **10**, the components **7**, **8** of the fixture **6** are moved apart to afford access to the treated workpiece.

In comparing the claimed invention encompassed by the appealed claims as we have construed them above, with the teachings of Mushardt set forth above, we find the following. We have interpreted the teachings of this reference that we set forth above in light of the meaning that one of ordinary skill in this art would give to the terms “ribs” and “webs” as used in the appealed claims in the manner that we set forth above.<sup>6</sup> We note that Mushardt uses the term “walls” and the phrase “ribs or webs,” the latter phrase indicating that the terms thereof are alternatively used to designate a “connector” between “walls,” in the same manner that

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<sup>6</sup> In evaluating the teachings of a reference, we must, of course, consider the specific teachings thereof and the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom. *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968). Thus, the definition of a term or the meaning of a phrase in a reference must be construed within the context of the reference as interpreted by one of ordinary skill in this art. *See In re Salem*, 553 F.2d 676, 682-83, 193 USPQ 513, 518 (CCPA 1977). In evaluating the relevance of the various teachings of the reference, we must presume skill on the part of those of ordinary skill in this art. *See In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

appellants use the terms “webs” and “ribs,” respectively. Indeed, with reference to Mushardt FIG. 1, we observe that an “integral” structure is formed from the sections of the “walls” and the associated “connector . . . ribs or webs,” which structure is a “rib” as specified in appealed claims 12 and 26 through 29, as indeed, the two such areas in FIG. 6 constitute “parallel chucking surfaces” as specified in appealed claims 12 and 26 through 29. We further observe that the “walls” run “along a surface” of a blade of the workpiece as specified for the “webs” in appealed claims 12 and 26 through 29 and we note that the area of the “walls” between the “integral” structures forming “ribs” is indeed a “web” between two “ribs” as this term is used in appellants’ specification and appealed claims.

We find that Mushardt teaches that the enclosures taught therein can have a “*plurality of spaced-apart compartments in the form of walls*” (page 2, lines 23-24; emphasis supplied) from which one of ordinary skill in this art would have reasonably inferred that an enclosure can have more than two “walls.” Mushardt also teaches that the “walls” can be connected by “*two or more spaced-apart ribs or webs*” (page 2, lines 27-29; emphasis added) from which one of ordinary skill in this art would have reasonably inferred that the “walls” can be connected by two or more “integral” structures. Thus, Mushardt would have reasonably suggested to one of ordinary skill in this art to provide the enclosure with “several spaced apart ribs connected along a surface of . . . [the] workpiece through webs” as specified in appealed claims 12 and 26 through 29.

We fail to find in Mushardt any express teaching that the portion of the “walls” and the “integral” structures which correspond to the “webs” and “ribs” specified in the appealed claims have “cross-sectional surfaces of approximately the same size” as specified in appealed claims 12 and 29; that the leading and trailing edges of the power unit blade workpiece is at least partially enclosed by webs of the enclosure, as in appealed claim 20, wherein the distance between the ribs can be smaller at the blade base and/or tip than in the center, as in claim 23, and the distance between the center ribs can be larger than twice the rib thickness, as in claim 25; and that the workpiece located between the ribs can be completely enclosed as in claims 18 and 19.

However, as we set forth above, it was known in the prior art as evinced by the combined teachings of Mushardt and Wendt that the formation of the enclosure around the workpiece was for the purpose

of manipulating the workpiece as required in order to hold the same to one or more machine tools for processing. Indeed, Wendt discloses, with respect to the drawing thereof, that the

block or capsule **3** . . . confines selected portions of the workpiece **2** which is a *blank of the type intended to be converted into a turbine blade* as a result of removal of material from certain exposed portions of the blank in a grinding machine . . . [wherein] the block **3** is a **solid body**. . . .

The block **3** is produced in a manner . . . that the configuration of the block **3** contributes significantly to convenience of manipulation in a machine tool. . . . Moreover, the external surfaces and/or other external features of the block **3** are selected with a view to ensure that the block can be readily mounted in the machine tool so as to allow for convenient orientation of the workpiece in one or more optimum positions relative to the material removing tool or tools as well as for reliable retention of the block in the selected position or positions. Thus, the block can be provided with *one or more specifically shaped and accurately positioned protuberances or other features which facilitate accurate positioning of the workpiece in the selected machine tool*, such as a grinding machine. [Page 2, line 84, to page 3, line 8; emphasis supplied.]

We find from an inspection of the Wendt drawing that block **3** that surrounds the irregularly contoured solid metal workpiece **2** as a solid piece has two sides which have a “bottom part **4**,” with “legs” having “suitably configured grooves or notches” at “**6** and **6**” which “cooperate with the respective ribs to locate the workpiece **2** in an optimum position with reference to the work holder,” and an “upper side **7**” which can be “provided with means for facilitating accurate and predictable centering and/or other types of mounting of the unit **1** on a machine tool” (page 3, lines 61-110). The two sides of block **3** are attached by a connector located above and below the solid workpiece **2**. We are of the opinion that one of ordinary skill in this art would have interpreted the sides and connector of the enclosure of Wendt to be the same as the “walls” and the connecting “ribs or webs” of the enclosure of Mushardt, wherein the difference between the drawings of these two references resides in that there is an irregularly contoured *solid* metal blank workpiece in the Wendt drawing and an irregularly contoured turbine twin blade workpiece in Mushardt FIGS. 1-6. Thus, as was the case with the structure shown in Mushardt, the “walls” and connecting “ribs or webs” of Wendt would fall within the meaning of “ribs” and “webs” as these terms are employed in appellants’ appealed claims.

Thus, we are of the view that one of ordinary skill in this art would have reasonably used the knowledge in the art as evinced by Mushardt and Wendt that any number of “walls” and connector

“ribs or webs” can be arranged around an irregularly contoured metal workpiece as required to hold that workpiece in a desired position on a machine tool or tools for processing. Thus, we find that one of ordinary skill in the art would have reasonably arrived at the configuration of “ribs” and “webs” specified in appealed claims 12, 13, 20, 23 and 25 through 29 through the routine experimentation involved with arranging an enclosure around an irregularly contoured metal workpiece to facilitate the manipulation thereof with respect to chucking, that is, holding the same in one or more machine tools in the desired orientation for processing as shown by the combined teachings of the applied references.

Accordingly, we agree with the examiner (answer, pages 3-4) that the principal issue in determining the patentability of the claimed invention encompassed by appealed claims 12, 13, 20, 23 and 25 through 29 with respect to the combined teachings of Mushardt and Wendt is whether one of ordinary skill in this art would have made the workpiece enclosure from “a plastic material,” such as a “thermoplastic,” which terms we have construed above to encompass a polymer material that contains reinforcing fillers. In this respect, we further agree with the examiner, that Wendt would have reasonably suggested to one of ordinary skill in this art that, compared to the metal enclosures of Mushardt, the polymeric material disclosed in Wendt will form the enclosure at a lower temperature and can be removed from the workpiece by cooling without the use of break points and special tools (answer, page 4).

Indeed, Wendt discloses that such advantages are obtained when the workpiece enclosure is prepared from a “synthetic plastic material and a filler which is *distributed in* the synthetic plastic material,” wherein the plastic material can be “styrene, an ester, an epoxy resin or an acrylate” (page 2, lines 40-59; emphasis supplied). We find that one of ordinary skill in the art would have recognized that the plastic materials listed in Wendt are all flammable and are useful in engineering applications as seen from the definition of “plastic” that we set forth above. Wendt teaches that the plastic material containing the reinforcing filler provides the workpiece enclosure with a “stability” that is “at least as satisfactory as that of blocks which are made of” metal such as that used by Mushardt (e.g., page 3, lines 45-60, and page 4, lines 25-47); that such plastic material is used to prepare the workpiece enclosure by injection molding and will *shrink to conform to the shape of the workpiece* during

setting (e.g., page 2, lines 60-61 and 119-124, and page 4, lines 1-24); and that such plastic material is brittle at low temperatures which facilitates the removal of the enclosure from the workpiece without the necessity for rated break lines or points, such as rated break point **10** in the Mushardt FIGS. discussed above (*see supra* p. 8), and thus can be removed by “simple mechanical means” (e.g., page 2, lines 62-69, page 3, lines 9-44, and page 4, lines 48-71).

Accordingly, we find that the combined teachings of Mushardt and Wendt would have provided one of ordinary skill in this art with the motivation to enclose an irregularly contoured metal workpiece in a plastic material containing a reinforcing filler, wherein the enclosure is formed by injection molding in a shape providing parallel chucking surfaces on “ribs connected along a surface of said metal workpiece through webs” and will shrink to conform to the workpiece, thus facilitating the manipulation of the workpiece with respect to the chucking surfaces, that is, holding the same in one or more machine tools in the desired orientation for processing, wherein the enclosure can be removed from the workpiece by cooling. One of ordinary skill in this art would have had the reasonable expectation that such an enclosure will have the stability to protect the workpiece from the stress and strain of processing on machine tools and can be readily removed from the workpiece following processing. Accordingly, one of ordinary skill in this art following the combined teachings of Mushardt and Wendt would have reasonably arrived at the claimed invention encompassed by appealed claims 12, 13, 20, 23 and 25 through 29. *See e.g., Pro-Mold & Tool Co. v. Great lakes Plastics Inc.*, 75 F.3d 1568, 1573, 37 USPQ 1626, 1629-30 (Fed. Cir. 1996) (“In this case, the reason to combine [the references] arose from the very nature of the subject matter involved, the size of the card intended to be enclosed.”); *In re Gorman*, 933 F.2d 982, 986-87, 18 USPQ2d 1885, 1888-89 (Fed. Cir. 1991) (“The extent to which such suggestion [to select elements of various teachings in order to form the claimed invention] must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior art and its relationship to the applicant’s invention.”); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of

the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”).

Accordingly, since the examiner has established a *prima facie* case of obviousness, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants’ arguments. *See generally In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We have carefully considered all of appellants’ arguments. While appellants contend that the claimed plastic enclosure overcomes a number of disadvantages they find in the metal enclosure of Mushardt (brief, pages 5-6), we find that these disadvantages are the same or similar disadvantages taught by Wendt to be overcome through the use of the plastic material containing a reinforcing filler in place of metal to form the enclosure (e.g., page 1, line 6, to page 2, line 39). Furthermore, we cannot agree with appellants that the enclosures of Mushardt and Wendt can be characterized as “massive blocks” (brief, pages 5-7). As we set forth above, we find from the Mushardt FIGS. that the enclosure entirely surrounds the irregularly contoured twin-blade workpiece *only* in the “integral” structures formed by the “walls” and the “ribs or webs” which we view as a “rib” that one of ordinary skill in this art would reasonably find to provide a “chucking surface” for processing “segments 3 and 4” (Mushardt, page 4, lines 74-79). Thus, the “integral” structures are “ribs” as this term is used by appellants in their specification and appealed claims and we find no limitation in appellants’ appealed claims which would preclude such a structure in the claimed enclosures. *See In re Self*, 671 F.2d 1344, 1348-49, 213 USPQ 1, 5 (CCPA 1982). In similar manner, we find that the enclosure exemplified in the Wendt drawing with respect to an irregularly contoured solid metal workpiece differs from the appealed claims in the presence of one rather than several parallel “ribs connected along a surface of said metal workpiece through webs” and not in the amount of material used in or the shape of the plastic enclosure.

Appellants further contend that there is no motivation to combine Mushardt and Wendt because Wendt “notes that a shape can be formed so as to orient the workpiece, while Appellants’ novel claim

shape is used to prevent shrinkage cracks from occurring due to the use of a plastic enclosure” while admitting that “such shrinkage cracks are not a concern [to Wendt] because it makes use of 90% inorganic filler material to prevent such shrinkage cracks” (brief, page 8). We cannot agree with appellants’ position because the purpose of both Mushardt and Wendt is to form an enclosure to orient the workpiece for processing in a machine tool or tools, which purpose is shared by appellants as seen, for example, from the preamble to appealed claim 12 which specifies “[a] form-fitting cast-on enclosure arrangement having parallel *chucking surfaces* for *fixing* an irregular contoured metal work piece for *processing*” (emphasis supplied). Even if appellants did express a different purpose for employing the plastic material of Wendt in place of the metal material of Mushardt, we are of the view that one of ordinary skill in this art would have been reasonably motivated to use the plastic material of Wendt in enclosure arrangements shown by the combined teachings of Mushardt and Wendt for the purpose of orienting the work piece in the manner noted by appellants. See *In re Kemps*, 97 F.3d 1427, 1429-30, 40 USPQ2d 1309, 1311-12 (Fed. Cir, 1996); *In re Dillon*, 919 F.2d 688, 692-94, 16 USPQ2d 1897, 1901-02 (Fed. Cir. 1990)(*in banc*).

Turning now to appellants’ arguments submitted with respect to certain of the appealed claims, we find that appellants’ admission that the plastic material containing reinforcing fillers disclosed by Wendt forms crack-free enclosures, as specified by certain of the appealed claims, indeed is supported by the teaching in this reference that the injection molded enclosure shrinks during setting (page 2, lines 119-124). For the reasons set forth above, we cannot agree with the arguments advanced by appellants with respect to appealed claims 28 and 29 that the plastic material containing reinforcing fillers, including polystyrene, of Wendt is excluded from appealed claims 12, 13, 28 and 29 by the transitional term “comprising” or the transitional phrase “consisting of” (brief, pages 8-9). We further find that, on this record, the claimed processes encompassed by appealed claims 26 and 27 are not distinguished over the applied prior art by reason of the “plastic material” used therein (*id.*, pages 10-11). While Wendt does not disclose that the plastic material containing a reinforcing filler used to prepare the enclosures disclosed therein can be “substantially reusable” as specified in claim 26, we find no evidence in this record that a molded thermoplastic material containing such a filler would not be

“substantially reusable.” *In re Skoner*, 517 F.2d 947, 950-51, 186 USPQ 80, 82-83 (CCPA 1975).

In similar manner, we find no evidence in this record that “continuous cracks” are not formed in the enclosures of Wendt made from plastic material containing reinforcing fillers when it becomes brittle upon cooling to remove the enclosure from the workpiece as specified in appealed claim 27. *Id.*

Furthermore, we find no support in appellants’ appealed claims as interpreted in light of their disclosure for the notion that the appealed claims, such as claim 20, would preclude the use of plastic material between the blades of a twin-blade workpiece as in Mushardt (*id.*, page 9). We point out in this respect that the claim language “*webs at least partially* enclose the leading edge and trailing edge of the blade” in claim 20 (emphasis supplied) requires only that the blade be *at least* partially enclosed by the webs, which, of course, is inclusive of being completely surrounded by the webs. With respect to the arguments advanced with respect to appealed claims 23 and 25 (*id.*, page 10), we remain of the view that the distances between the chucking surfaces, that is, “ribs,” would have been a modification made by one of ordinary skill of this art working through routine experimentation to provide such surfaces as required to orient the workpiece in a machine tool or tools.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Mushardt and Wendt with appellants’ countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 12 through 14 and 16 through 29 would have been obvious as a matter of law under 35 U.S.C. § 103.

While we have affirmed the ground of rejection under § 103 over the combined teachings of Mushardt and Wendt<sup>7</sup> which encompassed appealed claims 26 and 27, we cannot reach the same conclusion with respect to the ground of rejection of these appealed claims under § 102(b) as anticipated by Wendt alone. As we found above, Wendt does not specifically disclose “a plastic material enclosure having *several* spaced apart ribs connected along a surface of said metal workpiece through webs”

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<sup>7</sup> A reference that does not anticipate the claimed invention under § 102(b) can still be applied thereto “as evidence of obviousness under § 103 for all it fairly suggests to one of ordinary skill in the art.” *See In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973).

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(emphasis supplied). Thus, we find that Wendt does not *describe* the invention encompassed by appealed claims 26 and 27 within the meaning of § 102(b). *See generally, Wiggins, supra; In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972).

The examiner's decision is affirmed.

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

*AFFIRMED*

CHARLES F. WARREN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	
THOMAS A. WALTZ	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
PAUL LIEBERMAN	)	
Administrative Patent Judge	)	

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