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Julia Church Dierker Dierker & Associates, P.C. 3331 W. Big Beaver Road Suite 109 Troy, MI 48084-2813			LE, NINH V	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN N. OWENS,
INGRID A. ROUSSEAU, ELISABETH J. BERGER, and
HAMID G. KIA

Appeal 2011-011977
Application 12/273,903
Technology Center 1700

Before RICHARD E. SCHAFER, MARK NAGUMO, and
CHRISTOPHER L. CRUMBLEY, *Administrative Patent Judges*.

CRUMBLEY, *Administrative Patent Judge*.

DECISION ON APPEAL

John N. Owens, Ingrid A. Rousseau, Elisabeth J. Berger, and Hamid G. Kia (collectively, “Appellants” or “Owens”) timely appeal under 35 U.S.C. § 134(a) from the Examiner’s final rejection of Claims 16-18.¹ We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

STATEMENT OF THE CASE

The appealed claims are directed to a method of forming a part with a feature having a die-locked geometry. Claim 16, set forth below, is illustrative of the subject matter on appeal:

16. A tool for forming a part with a feature having a die-locked geometry, the tool comprising:
- at least one die;
 - a cavity defined in a surface of the at least one die;
 - a protrusion formed in the cavity and positioned normal to an inner surface of the least one die, the protrusion configured to enable part removal from the tool; and
 - a shape memory polymer insert, in its temporary shape, disposed on the protrusion, the shape memory polymer insert having
 - i) the die-locked geometry as its temporary shape, and
 - ii) a geometry that is removable from the part feature as its permanent shape.

Appellants have argued the patentability of Claims 16-18 together, therefore all appealed claims stand or fall together with Claim 16. 37 C.F.R. § 41.37(c)(1)(vii).

¹ Application Ser. No. 12/273,903, entitled *Method of Forming a Part With a Feature Having a Die-Locked Geometry*, filed November 19, 2008. The real party in interest is listed as GM Global Technology Operations LLC.

less useful due to the tendency for the die to get stuck in the molded part after stamping. Owens uses the term “die-locked” to refer to this problem.

The Owens Specification provides both an explicit definition and an illustration of the term “die-locked,” as follows:

As used herein, the term “die-locked” refers to a molding event where a part cannot be removed from a molding tool due, at least in part, to one or more features of the part being stuck in the mold. Accordingly, a “die-locked feature” or a “feature having die-locked geometry” is a feature of the part having a shape that prevents the part from being removed from the molding tool using conventional removal techniques.

Spec. ¶ 0007.⁴

Figure 1B of the Owens specification is reproduced below:

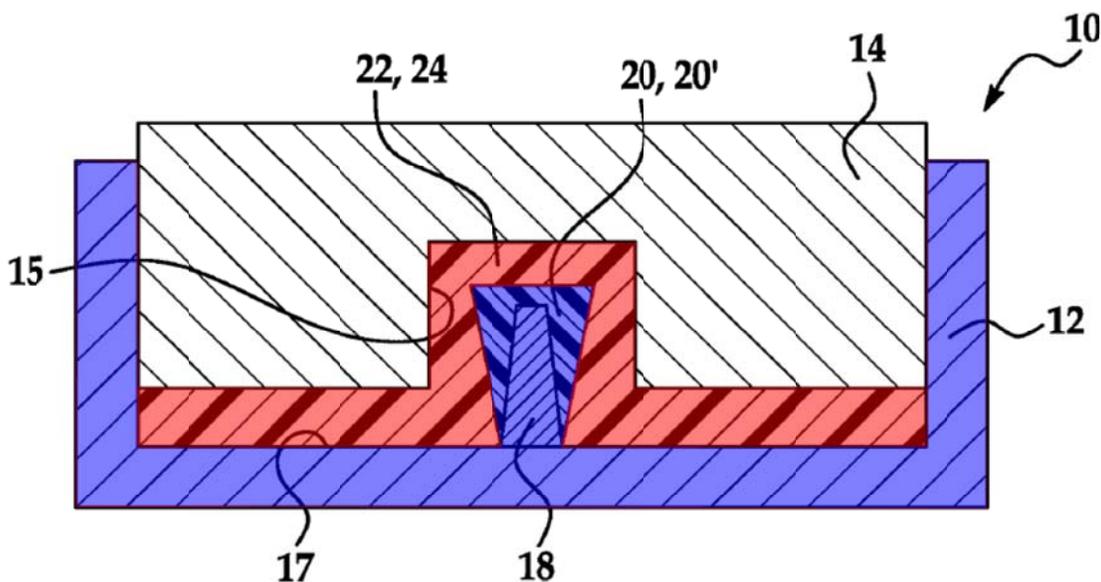


FIG. 1B

Figure 1B shows a molded part **24** (shaded red/lighter for clarity) being formed between upper die **14** (unshaded) and lower die **12**, which further

⁴ We refer to the specification as “Spec.”

comprises protrusion **18** and shape memory polymer insert **20** (shaded blue/darker for clarity).

As shown in Figure 1B, after stamping part **24** has a “die-locked geometry”: a dove-tail shaped cavity that is wider at the top than at the bottom, such that a unitary die capable of forming such a cavity would remain stuck in the part after molding. Owens addresses this problem by providing the lower die **12** with a non-die-locked protrusion **18**, around which a shape memory polymer insert **20**, in its temporary shape, is placed. After molding, the die is first removed, then the shape memory polymer insert is allowed to return to its permanent shape and removed from the part. Spec. ¶¶ 0012-0015.

The Examiner rejected Claims 16-18 as anticipated under 35 U.S.C. § 102(b). Specifically, the Examiner found that Figure 6 of Browne, reproduced below, discloses a molding tool having at least one die **50** having a cavity and a protrusion, and a shape memory polymer insert **52, 62**. Ans. 4-6.

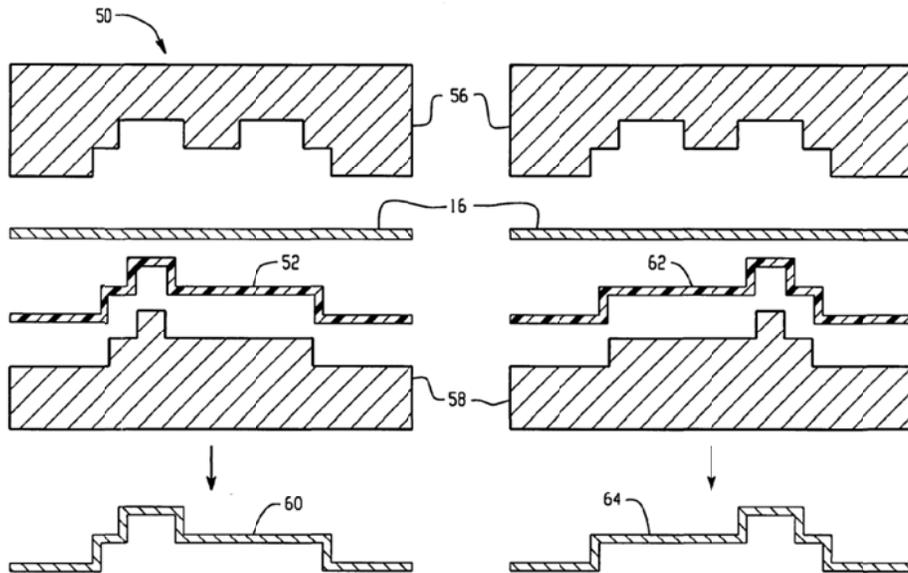


Fig. 6

Figure 6 of Browne shows a tool **50** for molding a blank **16**, comprising dies **56, 58** and shape memory polymer insert **52, 62**.

The Examiner found that Figure 6 of Browne also discloses a “die-locked geometry,” reasoning as follows:

Browne discloses a first reconfigurable insert **52** that corresponds to the geometry of the female die **56** upon activation which molds blank **16** to produce part **60** as shown in Figure 6. Browne also teaches that the shape memory material of said insert provides sufficient rigidity to impress a desired part processed therein. Therefore, upon molding of blank **16** to produce part **60** whereby the reconfigurable insert **52** corresponds to the female die **56**, the rigidity of said insert would cause part **60** to be stuck inside of the female die **56** once part **60** is formed. This feature would correspond to the “die locked geometry” as claimed.

Ans. 9-10 (internal citations omitted).

In reply, Appellants argue that because Figure 6 of Browne shows dies having only square or rectangular features, they cannot have a “die-locked geometry” as defined in the instant specification. Reply. Br. 6.

Given the explicit definition of “die-locked geometry” set forth in Owens’ specification, we find that Figure 6 of Browne does not disclose a part having such a geometry. While the Examiner’s reasoning – based on the rigidity of the shape memory material of Browne – is logical, we believe it misses the mark. As Appellants note, “die-locked geometry” is defined in the specification in relation to the *shape* of the part; specifically, the *shape itself* must prevent removal of the die from the part. Spec. 0007. The shape of the inserts disclosed in Figure 6 of Browne, having what appear to be 90° angles, would not necessarily become stuck in the molded part. Browne

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therefore cannot be said to disclose a “die-locked geometry,” as Appellants have defined the term.

CONCLUSION

For the foregoing reasons, we find that Browne does not disclose a die-locked geometry and therefore the reference does not disclose every element of the appealed claims. We therefore reverse the rejection of Claims 16-18 as anticipated under 35 U.S.C. § 102(b).

REVERSED

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