

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SOREN C. SORENSEN and JENS O. SORENSEN

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Appeal No. 1997-2251  
Application 08/251,385

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ON BRIEF

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Before GARRIS, WARREN and OWENS, *Administrative Patent Judges*.  
OWENS, *Administrative Patent Judge*.

*DECISION ON APPEAL*

This is an appeal from the examiner's final rejection of claims 1-5, 47 and 49-51, which are all of the claims remaining in the application.

*THE INVENTION*

Appellants' claimed invention is directed toward injection molding elongated articles such as cable ties.

Claim 1 is illustrative and reads as follows:

1. A method of injection molding a cable tie having a locking head, a strap terminating in a tip for passing through said head, and ratchet teeth on one side of the strap, wherein the locking head includes a pawl having teeth with surfaces for engaging the ratchet teeth to lock the strap in the locking head after the tip end of the strap has been pulled through the opening, the method comprising the steps of

(a) forming the cable tie by injecting molten plastic material into a mold cavity defined by a first mold part combined with a second mold part, wherein the first mold part includes a head region defining a portion of the head of the cable tie and the second mold part includes a tip region defining a portion of the tip of the cable tie;

(b) separating the first mold part from the second mold part while retaining said portion of the head of the cable tie in the head region of the first mold part and said portion of the tip of the cable tie in the tip region of the second mold part, to separate the head from the second mold part, to separate the tip from the first mold part, and to separate a major portion of the strap of the cable tie from the first and second mold parts;

(c) further separating the first mold part from the second mold part while retaining said portion of the head of the cable tie in the head region of the first mold part to thereby remove said portion of the tip of the cable tie from the second mold part; and

(d) ejecting the head of the cable tie from the head region of the first mold part.

Appeal No. 1997-2251  
Application 8/251,385

*THE REFERENCES*

Miller 1970	3,537,676	Nov. 3,
Smirne 1978	4,076,483	Feb. 28,
Sorensen 1988	4,776,067	Oct. 11,
Funck <sup>1</sup> 1970	1,485,656	Feb. 12,

(German disclosure document)

*THE REJECTION*

Claims 1-5, 47 and 49-51 stand rejected under 35 U.S.C. § 103 as being unpatentable over Miller in view of Smirne or Funck, further in view of Sorensen.

*OPINION*

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejection is not well founded. Accordingly, we reverse this rejection.

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<sup>1</sup>Citations herein to this reference are to the English translation thereof which is of record.

*Claims 1 and 5*

Miller discloses a method for injection molding a threaded bottle cap (12) having a reclosure element (20) attached to a threaded annular skirt (13) of the cap by a web (22).

As pointed out by appellants (brief, page 6), when Miller's mold is opened, the entire molded article is in one side of the mold as shown in figure 3. The examiner argues that the reclosure element is formed on one side of the mold and the threaded annular skirt is formed on the other side (answer, page 7). Even if this argument is correct, it is not persuasive because claims 1 and 5 require that when the first and second mold parts are separated, the head of the cable tie is in the first mold part and the portion of the tip in the tip region is in the second mold part. The examiner has not pointed out, and we do not find, such a step in Miller. The examiner's statement that "[t]he mold is opened for removal of the article where in [sic, wherein] the top is in one mold

Appeal No. 1997-2251  
Application 8/251,385

part and the cap is in the other" (answer, page 4) appears to be factually incorrect.

Smirne (col. 3, lines 46-56; figure 2) and Funck (pages 9-10; figures 8 and 9), disclose injection molding shoe soles using a process wherein the molded part is removed from the mold with the assistance of an ejector pin. Funck also discloses (page 9) using compressed air when removing the part from the mold.

The examiner argues that it would have been obvious to one of ordinary skill in the art in view of either Smirne or Funck to retain a portion of Miller's cap in an upper mold part to aid in ejection by lifting it from the mold surface (answer, page 5). Miller, however, removes his article from the mold by unscrewing it from a core pin (74) (col. 3, lines 16-17). The examiner has not explained, and it is not apparent, why the applied references would have led one of ordinary skill in the art to separate Miller's mold parts such

Appeal No. 1997-2251  
Application 8/251,385

that the reclosure element and annular skirt are in different sides of the mold, and to remove them from the mold using the methods of Smirne or Funck. Furthermore, the examiner has not explained why the knowledge in the art that cable ties existed, as indicated by Sorensen, together with the applied references, would have led one of ordinary skill in the art to apply the Miller process, modified as proposed by the examiner, to make a cable tie as recited in appellants' claim 1. The examiner's argument that Miller's method is applicable to making any article of any shape (answer, page 4) appears to have no factual basis.

Appellants argue that one of ordinary skill in the art would not have applied the methods of Smirne or Funck to cable ties because the teeth would have to be distorted to enable them to be released from the mold, and that if the teeth were rounded as in the Smirne method, the strap of the cable tie would not be held in the locking head by the pawl (brief,

Appeal No. 1997-2251  
Application 8/251,385

pages 9-10). This argument is plausible and is not effectively refuted by the examiner's mere assertion that the shape of the teeth is an obvious design choice (answer, page 8).

*Claims 2-4, 47 and 49-51*

Claims 2-4, 47 and 49-51 are similar to claims 1 and 5, but differ in that claims 2-4, 47 and 49-51 recite that the article being injection molded is an elongated article having a head and a strap terminating in a tip, and require that the tip region of the second mold part includes an undercut region.

The examiner argues that Smirne and Funck use undercut regions (answer, page 5). Smirne's mold has a surface (16) which forms ribs (14) in the molded article (col. 3, lines 30-35). The examiner does not explain, and it is not apparent, why such a surface has an undercut region as that term would be understood

by one of ordinary skill in the art in view of appellants'

Appeal No. 1997-2251  
Application 8/251,385

disclosure (page 6; figure 2, item 30). The examiner does not point to a disclosure in Funck of what the examiner considers to be an undercut region.

The examiner argues that undercut regions are "well known in the molding art and are deemed demonstrated by the grooved portions provided in pins (74) for holding the article in place" (answer, page 5). The only applied reference which has a pin (74) is Miller. In this reference, pin 74 has grooves which form the threads in the cap. The examiner does not explain why one of ordinary skill in the art would have considered such grooves to be an undercut region as that term is used by appellants.

#### *Conclusion*

For the above reasons, we find that the examiner has not set forth a factual basis which is sufficient for supporting a conclusion of obviousness of the invention recited in any of appellants' claims. Accordingly, we reverse the examiner's rejection.

Appeal No. 1997-2251  
Application 8/251,385

*DECISION*

The rejection of claims 1-5, 47 and 49-51 under 35 U.S.C. § 103 over Miller in view of Smirne or Funck, further in view of Sorensen is reversed.

*REVERSED*

BRADLEY R. GARRIS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
CHARLES F. WARREN	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
TERRY J. OWENS	)	
Administrative Patent Judge	)	

Appeal No. 1997-2251  
Application 8/251,385

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