

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOSEPH J. PERRUZZI, MICHAEL DIPAOLA  
and EDWARD J. HILLARD

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Appeal No. 2002-1879  
Application No. 09/246,212

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ON BRIEF

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Before ABRAMS, STAAB and McQUADE, Administrative Patent Judges.  
McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Joseph J. Perruzzi et al. appeal from the final rejection of claims 1 through 22, all of the claims pending in the application.

THE INVENTION

The invention relates to "a method [claims 1 through 11] and apparatus [claims 12 through 22] for providing guidance parameters at launch that direct a pursuing vehicle from a launching vehicle to a target vehicle capable of evasive maneuvering after the target vehicle becomes alerted to the

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presence of the pursuing vehicle" (specification, page 1).

Representative claim 1 reads as follows:

1. In a system for directing a pursuing vehicle from a launching vehicle to a target vehicle wherein the launching vehicle determines a range and bearing to and course and speed of the target vehicle and generates initial operating parameters for transfer to the pursuing vehicle that establish an intercept trajectory including a path along an aim point bearing to the target vehicle from the launching vehicle and wherein the determination of the initial operating parameters is made with respect to a first Cartesian coordinate system having an ordinate axis on the determined bearing, the improvement for enabling the operating parameters to compensate for a post launch evasive maneuver of the target vehicle comprising the steps of:

defining the trajectory of the target vehicle including the evasive maneuver on a second Cartesian coordinate system;

converting the definition of the target vehicle course from the second to the first Cartesian coordinate system by rotating the second Cartesian coordinate system by an angle equal to the difference between the aim point path bearing and the determined bearing to the target; and

iteratively processing the courses of the pursuing and target vehicles to the intercept in advance of the launch to generate the initial operating parameters.

#### THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

Thornberg et al. (Thornberg)	5,552,983	Sep. 3, 1996
Bessacini	6,006,145	Dec. 21, 1999

THE REJECTION

Claims 1 through 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bessacini in view of Thornberg.

Attention is directed to the appellants' brief (Paper No. 12) and to the examiner's final rejection and answer (Paper Nos. 8 and 13) for the respective positions of the appellants and the examiner regarding the merits of this rejection.<sup>1</sup>

DISCUSSION

Bessacini, the examiner's primary reference, discloses "a control method and apparatus for producing guidance parameters for use by a pursuing vehicle [e.g., a torpedo] at launch that take into account potential evasive maneuvers of a target vehicle" (column 3, lines 27 through 30). In general,

initial guidance parameters are provided to place a pursuing vehicle on an intercept trajectory from a launching vehicle to a target vehicle with evasion capabilities. At the launching vehicle, the control method and apparatus respond to the initial parameters, a representation of a pursuing vehicle characteristic trajectory derived from a corresponding generic model and a representation of an evading target characteristic trajectory derived from another generic model as inputs of iterative processing. Iterative processing of functional forms of the trajectories,

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<sup>1</sup> As correctly pointed out by the examiner (see page 2 in the answer), and notwithstanding comments to the contrary by the appellants (see pages 3, 6 and 7 in the brief), the above stated rejection constitutes the only issue in this appeal.

starting with the initial estimates of the operating parameter solutions, provides successive operating parameter solutions that converge. During each iteration, the method and apparatus determine an alertment bearing from the target vehicle to the pursuing vehicle at alertment. This serves as a basis for determining the expected course and speed of the target vehicle as a result of an evasive maneuver, with the course being based upon the alertment bearing. Once convergence has been achieved, the pursuing vehicle receives guidance parameters based upon the last target state estimates and the final solutions [column 3, lines 43 through 63].

As conceded by the examiner (see page 3 in the final rejection), Bessacini does not respond to the steps in independent method claim 1, or the corresponding means in independent apparatus claim 12,<sup>2</sup> for defining the trajectory of the target vehicle including the evasive maneuver on a second Cartesian coordinate system and for converting the definition of the target vehicle course from the second to the first Cartesian coordinate system by rotating the second Cartesian coordinate system by an angle equal to the difference between the aim point path bearing and the determined bearing to the target.<sup>3</sup> To

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<sup>2</sup> As claim 12 is an apparatus claim, the words "the steps of" which appear after "comprising" should be deleted.

<sup>3</sup> Upon return of the application to the technology center, the examiner should review the descriptions of the first and second Cartesian coordinate systems on specification pages 8 through 10 and the related recitations in claims 1, 7, 12 and 18, particularly the portions relating to the ordinate axes of the systems, to ensure that they are consistent and correct.

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overcome these deficiencies, the examiner looks to Thornberg.

Thornberg discloses a system for facilitating the remote control of a vehicle, e.g., a torpedo, by allowing the operator to select a desired frame of reference and converting the operator's control inputs to account for the orientation of the vehicle relative to the selected frame of reference.

In proposing to combine Bessacini and Thornberg to reject claims 1 and 12, the examiner submits that it would have been obvious at the time the invention was made to a person having ordinary skill in the art "to use the conversions of Thornberg et al. in the invention of Bessacini because such modification would provide for controlling torpedo's [sic] for underwater delivery of ordinance" (final rejection, page 4).

In short, there is nothing in Thornberg's disclosure of a "post-launch" vehicle remote control system which would have suggested modifying Bessacini's "pre-launch" programmed vehicle control system so as to include the second Cartesian coordinate system and conversion features required by claims 1 and 12. The only motivation for combining these disparate teachings so as to arrive at the subject matter claimed stems from hindsight knowledge impermissibly derived from the appellants' own disclosure.

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Hence, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 1 and 12, and dependent claims 2 through 11 and 13 through 22, as being unpatentable over Bessacini in view of Thornberg.

SUMMARY

The decision of the examiner to reject claims 1 through 22 is reversed.

REVERSED

NEAL E. ABRAMS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
LAWRENCE J. STAAB	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
JOHN P. McQUADE	)	
Administrative Patent Judge	)	

JPM/gjh

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