

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LIN-HUA ZHANG and LEI ZHU

Appeal No. 2003-0061
Application No. 09/611,109

ON BRIEF

Before KIMLIN, WARREN and WALTZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 2-9 and 18, all the claims remaining in the present application. A copy of illustrative claim 18 is appended to this decision.

In the rejection of the appealed claims, the examiner does

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Appealed claims 2-9 and 18 stand rejected under 35 U.S.C. § 112, second paragraph.

Appellants submit at page 3 of the Brief that "claims 2 to 9 and 18 stand or fall together." Accordingly, all the appealed claims stand or fall together with claim 18.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in complete agreement with the examiner that the claimed subject matter is properly rejected under 35 U.S.C. § 112, second paragraph. Accordingly, we will sustain the examiner's rejection for the reasons set forth in the Answer, which we incorporate herein, and we add the following for emphasis only.

It is the examiner's position that the appealed claims violate 35 U.S.C. § 112, second paragraph, with the recitation of two limitations, namely, "methylene groups are optionally independently replaced by O, N or S," and "methylene groups are further optionally independently substituted with 1-2 oxo groups." Since a methylene group has only two bonds whereas a

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and methylene has only two bonds, it is not possible to substitute a methylene group with two oxo groups.

It is noteworthy that appellants have not contested the examiner's reasoning. Indeed, appellants agree with the examiner that "replacing 'N' for 'CH₂' creates an inoperative embodiment" (page 4 of Brief, second paragraph), and that a species possessing two oxo groups "creating 6 bonds to carbon cannot exist" (page 7 of Brief, second paragraph). In essence, it is appellants' argument that one of ordinary skill in the art would know that methylene groups cannot be replaced by N or with two oxo groups. According to appellants, one of ordinary skill in the art would understand, in light of the specification and state of the prior art, that methylene is substituted by "N alkyl" or "NH," not N, and that only one oxo group can be optionally substituted for a methylene group.

Appellants' argument would be appropriate if the ground of rejection was under the first paragraph of 35 U.S.C. § 112, i.e., appellants' argument addresses why one of ordinary skill in the

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claim language at issue. Since appellants readily concede that the claim language under rejection results in inoperative embodiments, we do not understand why appellants have not obviated this appeal by amending the claim language in a suitable manner.

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

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

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
)	
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CHARLES F. WARREN)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES

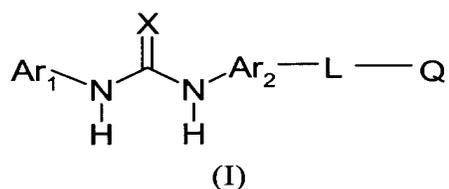
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APPENDIX

18. A process for producing a compound of the formula (I):



wherein:

Ar₁ is selected from the group consisting of phenyl, pyridine, pyridone, pyrrole, pyrrolidine, pyrazole, imidazole, oxazole, thiazole, furan and thiophene; wherein Ar₁ is optionally substituted by one or more R₁, R₂ or R₃;

Ar₂ is:

phenyl, naphthyl, quinoline, isoquinoline, tetrahydronaphthyl, tetrahydroquinoline, tetrahydroisoquinoline, benzimidazole,

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L, a linking group, is:

C₁₋₁₀ saturated or unsaturated branched or unbranched carbon chain;

wherein one or more methylene groups are optionally independently replaced by O,N or S; and

wherein said linking group is optionally substituted with 0-2 oxo groups and one or more C₁₋₄ branched or unbranched alkyl optionally substituted by one or more halogen atoms; or L is a cyclic group which is:

a) a C₅₋₈ cycloalkyl or cycloalkenyl optionally substituted with 1-2 oxo groups, 1-3 C₁₋₄ branched or unbranched alkyl, C₁₋₄ alkoxy or C₁₋₄ alkylamino chains;

b) phenyl, furan, thiophene, pyrrole, imidazolyl, pyridine, pyrimidine, pyridinone, dihydropyridinone, maleimide, dihydromaleimide, piperdine, piperazine or pyrazine each being optionally independently substituted with 1-3 C₁₋₄ branched or unbranched alkyl, C₁₋₄ alkoxy, hydroxy, cyano, mono- or di-(C₁₋₃ alkyl)amino, C₁₋₆ alkyl-S(O)_q, or halogen;

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and wherein one or more methylene groups are optionally replaced by O, NH, S(O), S(O)₂ or S, wherein said methylene groups are further optionally independently substituted with 1-2 oxo groups and one or more C₁₋₄ branched or unbranched alkyl optionally substituted by one or more halogen atoms;

Q is selected from the group consisting of:

- a) phenyl, naphthyl, pyridine, pyrimidine, pyridazine, imidazole, benzimidazole, furan, thiophene, pyran, naphthyridine, oxazo[4,5-b] pyridine and imidazo[4,5-b] pyridine, which are optionally substituted with one to three groups selected from the group consisting of halogen, C₁₋₆ alkyl, C₁₋₆ alkoxy, hydroxy, mono- or di-(C₁₋₃ alkyl)amino, C₁₋₆ alkyl-S(O)_m and phenylamino wherein the phenyl ring is optionally substituted with one to two groups selected from the group consisting of halogen, C₁₋₆ alkyl and C₁₋₆ alkoxy;
- b) tetrahydropyran, tetrahydrofuran, 1,3-dioxolanone, 1,3-dioxanone, 1,4-dioxane, morpholine, thiomorpholine,

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pentamethylene sulfone, tetramethylene sulfide, tetramethylene sulfoxide and tetramethylene sulfone which are optionally substituted with one to three groups selected from the group consisting of C₁₋₆ alkyl, C₁₋₆ alkoxy, hydroxy, mono- or di-(C₁₋₃ alkyl)amino-C₁₋₃alkyl, phenylamino-C₁₋₃ alkyl and C₁₋₃ alkoxy-C₁₋₃ alkyl;

- c) C₁₋₆ alkoxy, secondary or tertiary amine wherein the amino nitrogen is covalently bonded to groups selected from the group consisting of C₁₋₃ alkyl and C₁₋₅ alkoxyalkyl and phenyl wherein the phenyl ring is optionally substituted with one to two groups selected from the group consisting of halogen, C₁₋₆ alkoxy, hydroxy or mono- or di-(C₁₋₃ alkyl)amino, C₁₋₆ alkyl-S(O)_r and phenyl-S(O)_t, wherein the phenyl ring is optionally substituted with one to two groups consisting of halogen, C₁₋₆ alkoxy, hydroxy and mono- or di-(C₁₋₃ alkyl)amino;

R₁ is selected from the group consisting of:

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pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, thienyl, furyl, isoxazolyl and isothiazolyl; each such phenyl, naphthyl or heterocycle selected from the group hereinabove described, being substituted with 0 to 5 groups selected from the group consisting of halogen, C₁₋₆ branched or unbranched alkyl which is optionally partially or fully halogenated, C₃₋₈ cycloalkyl, C₅₋₈ cycloalkenyl, hydroxy, cyano, C₁₋₃ alkyloxy which is optionally partially or fully halogenated, NH₂C(O) and di(C₁₋₃)alkylaminocarbonyl;

- b) C₃₋₇ cycloalkyl selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentanyl, cyclohexanyl, cycloheptanyl, bicyclopentanyl, bicyclohexanyl and bicycloheptanyl, which are optionally partially or fully halogenated and optionally substituted with one to three C₁₋₃ alkyl groups, or an analog of such cycloalkyl group wherein one to three ring methylene groups are replaced by groups independently selected from O, S, CHOH, >C=O, >C=S and NH;
- c) C₃₋₁₀ branched alkenyl which may optionally be partially or

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of pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, thienyl, furyl, isoxazolyl and isothiazolyl, and each such phenyl, naphthyl or heterocyclic group being substituted with 0 to 5 groups selected from halogen, C₁₋₆ branched or unbranched alkyl which is optionally partially or fully halogenated, cyclopropyl, cyclobutyl, cyclopentanyl, cyclohexanyl, cycloheptanyl, bicyclopentanyl, bicyclohexanyl, bicycloheptanyl, hydroxy, cyano, C₁₋₃ alkyloxy which is optionally partially or fully halogenated, NH₂C(O) and mono- or di(C₁₋₃)alkylaminocarbonyl;

- d) C₅₋₇ cycloalkenyl selected from the group consisting of cyclopentenyl, cyclohexenyl, cyclohexadienyl, cycloheptenyl, cycloheptadienyl, bicyclohexenyl and bicycloheptenyl, wherein such cycloalkenyl group is optionally be substituted with one to three C₁₋₃ alkyl groups;
- e) cyano; and,
- f) methoxycarbonyl, ethoxycarbonyl and propoxycarbonyl;

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optionally partially or fully halogenated, halogen,
methoxycarbonyl and phenylsulfonyl;

R₃ is selected from the group consisting of

- a) a phenyl, naphthyl or heterocyclic group selected from the group consisting of pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, thienyl, furyl, tetrahydrofuryl, isoxazolyl, isothiazolyl, quinolinyl, isoquinolinyl, indolyl, benzimidazolyl, benzofuranyl, benzoxazolyl, benzisoxazolyl, benzpyrazolyl, benzothiofuranyl, cinnolinyl, pterindinyl, phthalazinyl, naphthypyridinyl, quinoxalinyl, quinazolinyl, purinyl and indazolyl wherein such phenyl, naphthyl or heterocyclic group is optionally substituted with one to five groups selected from the group consisting of a C₁₋₆ branched or unbranched alkyl, phenyl, naphthyl, heterocycle selected from the group hereinabove described, C₁₋₆ branched or unbranched alkyl which is

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which may optionally be partially or fully halogenated, phenyloxy, naphthyloxy, heteraryloxy wherein the heterocyclic moiety is selected from the group hereinabove described, nitro, amino, mono- or di-(C₁₋₃)alkylamino, phenylamino, naphthylamino, heterocyclylamino wherein the heterocyclyl moiety is selected from the group hereinabove described, NH₂C(O), a mono- or di-(C₁₋₃)alkyl aminocarbonyl, C₁₋₅ alkyl-C(O)-C₁₋₄ alkyl, amino-C₁₋₅ alkyl, mono- or di-(C₁₋₃)alkylamino-C₁₋₅ alkyl, amino-S(O)₂, di-(C₁₋₃)alkylamino-S(O)₂, R₄-C₁₋₅ alkyl, R₅-C₁₋₅ alkoxy, R₆-C(O)-C₁₋₅ alkyl and R₇-C₁₋₅ alkyl-N(R₈)-;

b) a fused aryl selected from the group consisting of benzocyclobutanyl, indanyl, indenyl, dihydronaphthyl, tetrahydronaphthyl, benzocycloheptanyl and benzocycloheptenyl, or a fused heterocyclyl selected from cyclopentenopyridine, cyclohexanopyridine, cyclopentano-pyrimidine, cyclohexanopyrimidine, cyclopentanopyrazine, cyclohexanopyrazine, cyclopentanopyridazine, cyclohexano-pyridazine, cyclopentanoquinoline, cyclohexanoquinoline,

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cyclohexanoimidazole, cyclopentanothiophene and cyclohexanothiophene; wherein the fused aryl or fused heterocyclyl ring is substituted with 0 to 3 groups independently selected from phenyl, naphthyl, heterocyclyl selected from the group consisting of pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, thienyl, furyl, isoxazolyl, and isothiazolyl, C₁₋₆ branched or unbranched alkyl which is optionally partially or fully halogenated, halo, cyano, C₁₋₃ alkyloxy which is optionally partially or fully halogenated, phenoxy, naphthyloxy, heterocycliloxy wherein the heterocyclyl moiety is selected from the group hereinabove described, nitro, amino, mono- or di-(C₁₋₃)alkylamino, phenylamino, naphthylamino, heterocyclylamino wherein the heterocyclyl moiety is selected from the group hereinabove described, NH₂C(O), a mono- or di-(C₁₋₃)alkyl aminocarbonyl, C₁₋₄ alkyl-OC(O), C₁₋₅ alkyl-C(O)-C₁₋₄ branched or unbranched alkyl, an amino-C₁₋₅ alkyl, mono- or di-(C₁₋₃) alkylamino-C₁₋₅ alkyl, R₉-C₁₋₅ alkyl, R₁₀-C₁₋₅ alkoxy,

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optionally partially or fully halogenated and optionally substituted with one to three C₁₋₃ alkyl groups;

- d) C₅₋₇ cycloalkenyl, selected from the group consisting of cyclopentenyl, cyclohexenyl, cyclohexadienyl, cycloheptenyl, cycloheptadienyl, bicyclohexenyl and bicycloheptenyl, wherein such cycloalkenyl group is optionally substituted with one to three C₁₋₃ alkyl groups;
- e) acetyl, aroyl, alkoxy carbonyl alkyl and phenylsulfonyl; and
- f) C₁₋₆ branched or unbranched alkyl optionally partially or fully halogenated;

R₁ and R₂ taken together optionally form a fused phenyl or pyridinyl ring;

each R₈ and R₁₃ is independently selected from the group consisting of:

hydrogen and C₁₋₄ branched or unbranched alkyl optionally partially or fully halogenated;

each R₄, R₅, R₆, R₇, R₉, R₁₀, R₁₁ and R₁₂ is independently selected from the group consisting of morpholine, piperidine,

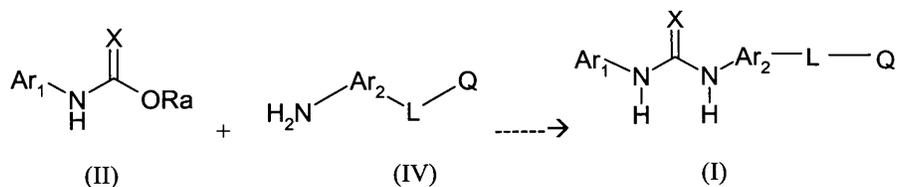
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t is 0, 1 or 2; and

X is O or S;

said process comprising:

reacting of intermediate of formula (II) with intermediate of formula (IV) in the presence of a suitable base said reaction taking place in a suitable solvent at a suitable temperature for a reaction time of about 1.5 hours:



wherein Ra is a C₂₋₃ halocarbon, Ar₁, Ar₂, X, L and Q are as defined hereinabove; to produce a compound of formula (I).