EXHIBIT A

Representative U.S. Patents (Front Pages)

Litman v. Goldberg, Index No. 524343/2025

Patents issued after 7/21/2024 with Richard C. Litman as attorney (SOL-safe)

Exhibit	Patent No.	Issue Date	Title
1	12043608	2024-07-23	2-(Benzo[b]thiophen-3-yl)-1-butyl-4,5-diphenyl-1H-imida...
2	12043609	2024-07-23	6'(4-methoxyphenyl)-2'-alkoxy-3,4'-bipyridine-3'-carbon...
3	12049459	2024-07-30	3-(4,5-Diphenyl-2-(pyridin-3-yl)-1H-imidazol-1-yl)-N,N-...
4	12054460	2024-08-06	9-(5-bromo-2-hydroxyphenyl)-10-[3-(dimethylamino)propyl...
5	12054464	2024-08-06	Methyl 4-((5-(3-fluorophenyl)-4-phenyl-4H-1,2,4-triazol...
6	12062780	2024-08-13	Hydrovoltaic power generation devices utilizing carbon ...
7	12065424	2024-08-20	6'(4-methoxyphenyl)-2'-alkoxy-3,4'-bipyridine-3'-carbon...
8	12071437	2024-08-27	Pyrazolo[1,5-a]pyrido[4,3-e]pyrimidine-2-carboxylic aci...
9	D1046141	2024-10-08	Dental tool for anchoring a rubber dam
10	12114620	2024-10-15	Vertical tubers planter and harvester
11	12116333	2024-10-15	3,3'-(hydrazine-1,2-diyl)bis(1-(naphthalen-2-yloxy)prop...
12	12194434	2025-01-14	Imidazolium ionic liquids made using cardanol extracted...

Exhibit A-1

U.S. Patent No.: 12043608

Issue Date: 2024-07-23

Title: 2-(Benzo[b]thiophen-3-yl)-1-butyl-4,5-diphenyl-1H-imidazole as an anti-inflammat...

US012043608B1

(12) **United States Patent**
Khalaf Ali et al.

(10) **Patent No.: US 12,043,608 B1**
(45) **Date of Patent: Jul. 23, 2024**

(54) **2-(BENZO[B]THIOPHEN-3-YL)-1-BUTYL-4,5-DIPHENYL-1H-IMIDAZOLE AS AN ANTI-INFLAMMATORY AND ANTI-MICROBIAL COMPOUND**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Al-Baha (SA); **Adel A. Marzouk**, Al-Ahsa (SA)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/242,465**

(22) Filed: **Sep. 5, 2023**

(51) **Int. Cl.**
C07D 401/04 (2006.01)
A61P 31/04 (2006.01)
A61P 31/10 (2006.01)

(52) **U.S. Cl.**
CPC ***C07D 401/04*** (2013.01); ***A61P 31/04*** (2018.01); ***A61P 31/10*** (2018.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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Marzouk et al., "New Method for Synthesis of Multi-Substituted Imidazoles", Journal of Heterocyclic Chemistry, vol. 55, Issue 7, Jul. 2018, pp. 1775-1782.

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Primary Examiner — Nannette Holloman
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A compound 2-(Benzo[b]thiophen-3-yl)-1-butyl-4,5-diphenyl-1H-imidazole compound, its synthesis, and its use as an anti-microbial and anti-inflammatory agent.

4 Claims, 2 Drawing Sheets

Exhibit A-2

U.S. Patent No.: 12043609

Issue Date: 2024-07-23

Title: 6'(4-methoxyphenyl)-2'-alkoxy-3,4'-bipyridine-3'-carbonitrile as antimicrobial c...

US012043609B1

(12) **United States Patent**
Ahmed et al.

(10) **Patent No.: US 12,043,609 B1**
(45) **Date of Patent: Jul. 23, 2024**

(54) **6'(4-METHOXYPHENYL)-2'-ALKOXY-3,4'-BIPYRIDINE-3'-CARBONITRILE AS ANTIMICROBIAL COMPOUNDS**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahasa (SA); **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Sohag (EG); **Amer A. Amer**, Sohag (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/379,906**

(22) Filed: **Oct. 13, 2023**

(51) **Int. Cl.**

C07D 401/04	(2006.01)
A61P 31/04	(2006.01)
A61P 31/10	(2006.01)

(52) **U.S. Cl.**
CPC ***C07D 401/04*** (2013.01); ***A61P 31/04*** (2018.01); ***A61P 31/10*** (2018.01)

(58) **Field of Classification Search**
CPC C07D 401/04
See application file for complete search history.

(56) **References Cited**

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5,916,905	A	6/1999	Weier et al.
2005/0182103	A1	8/2005	Finke et al.
2020/0331913	A1	10/2020	Lindstrom et al.

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Kovalev et al., "Synthesis Of 5-(4-Methoxyphenyl)-2,2'-Bipyridine-Based Schiff Base With Pyrene Moiety", AIP Conference Proceedings 2280, 040026 (2020).

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Primary Examiner — Shobha Kantamneni
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A 6'-(4-methoxyphenyl)-2'-alkoxy-3.4'-bipyridine-3'-carbonitrile compound, its synthesis, and its use as an antimicrobial agent.

2 Claims, No Drawings

Exhibit A-3

U.S. Patent No.: 12049459

Issue Date: 2024-07-30

Title: 3-(4,5-Diphenyl-2-(pyridin-3-yl)-1H-imidazol-1-yl)-N,N-dimethylpropan-1-amine as...

US012049459B1

(12) **United States Patent**
Ahmed et al.

(10) **Patent No.: US 12,049,459 B1**
(45) **Date of Patent: *Jul. 30, 2024**

(54) **3-(4,5-DIPHENYL-2-(PYRIDIN-3-YL)-1H-IMIDAZOL-1-YL)-N,N-DIMETHYLPROPAN-1-AMINE AS AN ANTICANCER COMPOUND**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahsa (SA); **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Al-Baha (EG); **Nawf Esanani**, Al-Ahsa (SA); **Adel A. Marzouk**, Al Azhar (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 6 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **18/241,394**

(22) Filed: **Sep. 1, 2023**

(51) **Int. Cl.**

A61K 31/4439	(2006.01)
A61K 31/4178	(2006.01)
A61P 35/00	(2006.01)
C07D 401/04	(2006.01)

(52) **U.S. Cl.**
CPC ***C07D 401/04*** (2013.01); ***A61K 31/4439*** (2013.01); ***A61P 35/00*** (2018.01); *A61K 31/4178* (2013.01)

(58) **Field of Classification Search**
CPC A61P 31/04; A61P 31/10; C07D 401/04; A61K 31/4178; A61K 31/4439
See application file for complete search history.

(56) **References Cited**

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Marzouk, et al., "Morpholinium Hydrogen Sulfate (MHS) Ionic Liquid as an Efficient Catalyst for the Synthesis of Bioactive Multi-Substituted Imidazoles (MSI) Under Solvent-Free Conditions", Zeitschrift für Naturforschung B, vol. 72 Issue 1, 2016.
Albayati, et al., "Piperidinium Hydrogen Sulfate (PHS) as an Efficient Ionic Liquid Catalyst for the Synthesis of Imidazole Derivative Under Solvent-Free Condition", Journal of Heterocyclic Chemistry, vol. 56, Issue 5, May 2019, pp. 1514-1519.
Shivani, et al., "One Pot Synthesis of Tri and Tetra Substituted Imidazole Derivatives", IJPBS | vol. 3| Issue 4 |Oct.-Dec. 2013|270-277.

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Primary Examiner — Craig D Ricci
Assistant Examiner — Janet L Coppins
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A compound 3-(4,5-Diphenyl-2-(pyridin-3-yl)-1H-imidazol-1-yl)-N,N-dimethylpropan-1-amine, its synthesis, and its use as an anticancer agent.

4 Claims, No Drawings

Exhibit A-4

U.S. Patent No.: 12054460

Issue Date: 2024-08-06

Title: 9-(5-bromo-2-hydroxyphenyl)-10-[3-(dimethylamino)propyl]-3,4,6,7,9,10-hexahydroa...

US012054460B1

(12) **United States Patent**
Ahmed et al.

(10) **Patent No.: US 12,054,460 B1**
(45) **Date of Patent: Aug. 6, 2024**

(54) **9-(5-BROMO-2-HYDROXYPHENYL)-10-[3-(DIMETHYLAMINO)PROPYL]-3,4,6,7,9,10-HEXAHYDROACRIDINE-1,8(2H,5H)-DIONE AS AN ANTIMICROBIAL COMPOUND**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahsa (SA); **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Sohag (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/414,442**

(22) Filed: **Jan. 16, 2024**

Related U.S. Application Data

(62) Division of application No. 18/382,887, filed on Oct. 23, 2023, now Pat. No. 11,976,041.

(51) **Int. Cl.**

C07D 219/06	(2006.01)
A61P 31/04	(2006.01)
A61P 31/10	(2006.01)

(52) **U.S. Cl.**
CPC ***C07D 219/06*** (2013.01); ***A61P 31/04*** (2018.01); ***A61P 31/10*** (2018.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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"9-(5-Bromo-2-Hydroxyphenyl)-2,3,4,5,6,7,9,10-Octahydroacridine-1,8-Dione".
"9-(5-Bromo-2-Hydroxyphenyl)-3,3,6,6-Tetramethyl-3,4,6,7,9,10-Hexahydroacridine-1,8(2h,5h)-Dione".
"9-(5-Bromo-2-Hydroxyphenyl)-10-(2-Hydroxypropyl)-3,3,6,6-Tetramethyl-1,2,3,4,5,6,7,8,9,10-Decahydroacridine-1,8-Dione".
"9-(5-Bromo-2-Hydroxyphenyl)-3,3,6,6,10-Pentamethyl-3,4,6,7,9,10-Hexahydroacridine-1,8(2h,5h)-Dione".
"9-(5-Bromo-2-Hydroxyphenyl)-10-(3-Methoxypropyl)-3,3,6,6-Tetramethyl-4,5,7,9-Tetrahydro-2h-Acridine-1,8-Dione".
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NPL-9: Balamurugan et al., "10-[2-(DimethylAmino) EthYl]-9-(4-MethoxyPhenYl)-3,3,6,6-TetraMethyl-3,4,6,7,9,10-HexaHydroAcridine-1,8(2H,5H)-dione" Acta Crystallogr Sect E Struct Rep Online, Feb. 1, 2009; 65(Pt 2): c271.
NPL-10: Sharma et al., "Application Of Cyclohexane-1,3-Diones In The Synthesis Of Six-Membered Nitrogen-Containing Heterocycles", ChemistrySelect, vol. 7, Issue 12, Mar. 29, 2022, e202200622.

Primary Examiner — David J Blanchard
Assistant Examiner — Sarah J Chickos
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A 9-(5-bromo-2-hydroxyphenyl)-10-[3-(dimethylamino) propyl]-3,4,6,7,9,10-hexahydroacridine-1,8(2H,5H)-dione compound, its synthesis, and its use as an antimicrobial agent.

6 Claims, No Drawings

Exhibit A-5

U.S. Patent No.: 12054464

Issue Date: 2024-08-06

Title: Methyl 4-((5-(3-fluorophenyl)-4-phenyl-4H-1,2,4-triazol-3-ylthio)methyl)benzoate...

US012054464B1

(12) **United States Patent**
Ali et al.

(10) **Patent No.: US 12,054,464 B1**
(45) **Date of Patent: Aug. 6, 2024**

(54) **METHYL 4-((5-(3-FLUOROPHENYL)-4-PHENYL-4H-1,2,4-TRIAZOL-3-YLTHIO) METHYL)BENZOATE AS AN ANTIMICROBIAL COMPOUND**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Sohag (EG); **Amer A. Amer**, Sohag (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/428,327**

(22) Filed: **Jan. 31, 2024**

Related U.S. Application Data

(62) Division of application No. 18/382,959, filed on Oct. 23, 2023.

(51) **Int. Cl.**
C07D 249/12 (2006.01)
A61P 31/04 (2006.01)
A61P 31/10 (2006.01)

(52) **U.S. Cl.**
CPC ***C07D 249/12*** (2013.01); ***A61P 31/04*** (2018.01); ***A61P 31/10*** (2018.01)

(58) **Field of Classification Search**
CPC C07D 249/12
See application file for complete search history.

(56) **References Cited**

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Methyl 3-({[5-(4-fluorophenyl)-4-phenyl-4H-1,2,4-triazol-3-yl]sulfanyl}methyl)benzoate,CSID:21572049, http://www.chemspider.com/Chemical-Structure.21572049.html (accessed 18:16, Oct. 23, 2023).

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Primary Examiner — Golam M Shameem
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

An methyl 4-((5-(3-fluorophenyl)-4-phenyl-4H-1,2,4-triazol-3-ylthio)methyl)benzoate compound, its synthesis, and its use as an antimicrobial agent.

6 Claims, 1 Drawing Sheet

Exhibit A-6

U.S. Patent No.: 12062780

Issue Date: 2024-08-13

Title: Hydrovoltaic power generation devices utilizing carbon sphere-coated nickel foam...

US012062780B1

(12) **United States Patent**
Alshoaibi et al.

(10) **Patent No.: US 12,062,780 B1**
(45) **Date of Patent: Aug. 13, 2024**

(54) **HYDROVOLTAIC POWER GENERATION DEVICES UTILIZING CARBON SPHERE-COATED NICKEL FOAM/PET SUBSTRATE**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Adil Alshoaibi**, Al-Ahsa (SA); **Majid Khan**, Mardan (PK)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 17 days.

(21) Appl. No.: **18/413,239**

(22) Filed: **Jan. 16, 2024**

(51) **Int. Cl.**

H01M 4/36	(2006.01)
H01M 4/04	(2006.01)
H01M 4/583	(2010.01)
H01M 4/66	(2006.01)
H01M 4/80	(2006.01)
H01M 14/00	(2006.01)

(52) **U.S. Cl.**
CPC ***H01M 4/364*** (2013.01); ***H01M 4/0404*** (2013.01); ***H01M 4/0471*** (2013.01); ***H01M 4/583*** (2013.01); ***H01M 4/661*** (2013.01); ***H01M 4/667*** (2013.01); ***H01M 4/808*** (2013.01); ***H01M 14/00*** (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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2023/0261209	A1 *	8/2023	Wang	H01M 10/0525 429/245

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Primary Examiner — Scott J. Chmielecki
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A process for preparing carbon spheres coated on a nickel (Ni) foam/polyethylene terephthalate (PET) substrate, as well as the use of the obtained product in the field of hydrovoltaic energy generation.

16 Claims, No Drawings

Exhibit A-7

U.S. Patent No.: 12065424

Issue Date: 2024-08-20

Title: 6'(4-methoxyphenyl)-2'-alkoxy-3,4'-bipyridine-3'-carbonitrile as antimicrobial c...

US012065424B1

(12) **United States Patent**
Ahmed et al.

(10) **Patent No.: US 12,065,424 B1**
(45) **Date of Patent: Aug. 20, 2024**

(54) **6'(4-METHOXYPHENYL)-2'-ALKOXY-3,4'-BIPYRIDINE-3'-CARBONITRILE AS ANTIMICROBIAL COMPOUNDS**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahasa (SA); **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Sohag (EG); **Amer A. Amer**, Sohag (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/425,923**

(22) Filed: **Jan. 29, 2024**

Related U.S. Application Data

(62) Division of application No. 18/379,906, filed on Oct. 13, 2023.

(51) **Int. Cl.**

C07D 401/04	(2006.01)
A61P 31/04	(2006.01)
A61P 31/10	(2006.01)

(52) **U.S. Cl.**
CPC ***C07D 401/04*** (2013.01); ***A61P 31/04*** (2018.01); ***A61P 31/10*** (2018.01)

(58) **Field of Classification Search**
CPC A61P 31/04; A61P 31/10
See application file for complete search history.

(56) **References Cited**

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2020/0331913	A1	10/2020	Lindstrom et al.

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Kovalev et al., "Synthesis of 5-(4-Methoxyphenyl)-2,2'-Bipyridine-Based Schiff Base With Pyrene Moiety", AIP Conference Proceedings 2280, 040026 (2020).

Primary Examiner — Shobha Kantamneni
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A 6'-(4-methoxyphenyl)-2'-alkoxy-3,4'-bipyridine-3'-carbonitrile compound, its synthesis, and its use as an antimicrobial agent.

3 Claims, No Drawings

Exhibit A-8

U.S. Patent No.: 12071437

Issue Date: 2024-08-27

Title: Pyrazolo[1,5-a]pyrido[4,3-e]pyrimidine-2-carboxylic acids as CK2 inhibitors

US012071437B1

(12) **United States Patent**
Tratrat et al.

(10) **Patent No.: US 12,071,437 B1**
(45) **Date of Patent: Aug. 27, 2024**

(54) **PYRAZOLO[1,5-a]PYRIDO[4,3-e] PYRIMIDINE-2-CARBOXYLIC ACIDS AS CK2 INHIBITORS**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Christophe Tratrat**, Al-Ahsa (SA); **Michelyne Haroun**, Al-Ahsa (SA)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/411,323**

(22) Filed: **Jan. 12, 2024**

(51) **Int. Cl.**
C07D 471/14 (2006.01)
A61K 31/519 (2006.01)
A61P 35/00 (2006.01)

(52) **U.S. Cl.**
CPC ***C07D 471/14*** (2013.01); ***A61K 31/519*** (2013.01); ***A61P 35/00*** (2018.01)

(58) **Field of Classification Search**
CPC C07D 471/14; A61K 31/519
See application file for complete search history.

(56) **References Cited**

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Primary Examiner — Andrew D Kosar
Assistant Examiner — John D Mcanany
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

Novel pyrazolo[1,5-a]pyrido[4,3-e]pyrimidine-2-carboxylic acid compounds, a method of synthesizing said compounds, a pharmaceutical composition comprising said compounds and a suitable carrier, and a method of using the compounds. The pyrazolo[1,5-a]pyrido[4,3-e]pyrimidine-2-carboxylic acid compounds, identified as CK2 inhibitors, are useful as anticancer and/or antitumor agents, and as agents for treating other kinase-associated conditions including inflammation, pain, and certain immunological disorders, and other types of diseases such as diabetes, viral infection, neurodegenerative diseases.

20 Claims, No Drawings

Exhibit A-9

U.S. Patent No.: D1046141

Issue Date: 2024-10-08

Title: Dental tool for anchoring a rubber dam

US0D1046141S

(12) United States Design Patent

Alsaleh

(10) Patent No.: US D1,046,141 S
(45) Date of Patent: ** *Oct. 8, 2024

(54) **DENTAL TOOL FOR ANCHORING A RUBBER DAM**

(71) Applicant: **KING SAUD UNIVERSITY**, Riyadh (SA)

(72) Inventor: **Lama Saleh Alsaleh**, Riyadh (SA)

(73) Assignee: **KING SAUD UNIVERSITY**, Riyadh (SA)

(*) Notice: This patent is subject to a terminal disclaimer.

(**) Term: **15 Years**

(21) Appl. No.: **29/746,671**

(22) Filed: **Aug. 16, 2020**

(51) **LOC (14) Cl.** **24-02**

(52) **U.S. Cl.**
USPC **D24/176**

(58) **Field of Classification Search**
USPC D24/143, 152, 154, 176–178
CPC A61C 5/00; A61C 5/80; A61C 5/82; A61C 5/85; A61C 5/90
See application file for complete search history.

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Primary Examiner — Wan Laymon
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **CLAIM**

The ornamental design for a dental tool for anchoring a rubber dam as shown and described.

DESCRIPTION

FIG. **1** is an environmental, perspective view of a dental tool for anchoring a rubber dam;
FIG. **2** is a top perspective view thereof;
FIG. **3** is a top plan view thereof;
FIG. **4** is a bottom view thereof;
FIG. **5** is a front elevational view thereof;
FIG. **6** is a rear elevational view thereof.
FIG. **7** is a right elevational view thereof.
FIG. **8** is a left elevational view thereof.
FIG. **9** is a reduced bottom perspective view thereof; and,
FIG. **10** is a reduced top perspective view thereof.
The broken lines showing of the gum and teeth in FIG. **1** depict environmental subject matter only and form no part of the claimed design.

1 Claim, 7 Drawing Sheets

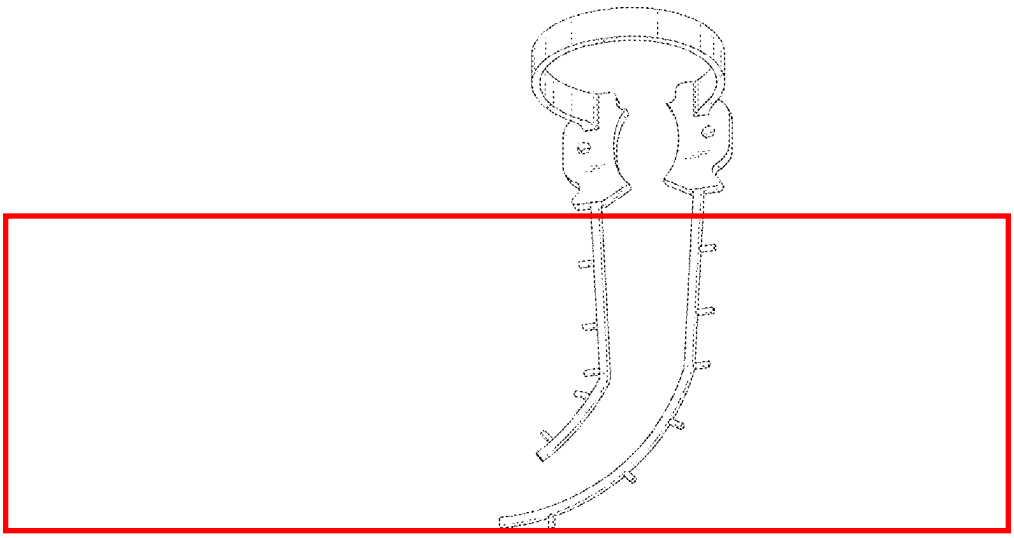

Exhibit A-10

U.S. Patent No.: 12114620

Issue Date: 2024-10-15

Title: Vertical tubers planter and harvester

US012114620B1

(12) **United States Patent**
Asem

(10) **Patent No.: US 12,114,620 B1**
(45) **Date of Patent: Oct. 15, 2024**

(54) **VERTICAL TUBERS PLANTER AND HARVESTER**

(71) Applicant: **KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH**, Safat (KW)

(72) Inventor: **Samira Omar Asem**, Safat (KW)

(73) Assignee: **KUWAIT INSTITUTE FOR SCIENTIFIC RESEARCH**, Safat (KW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/241,049**

(22) Filed: **Aug. 31, 2023**

(51) **Int. Cl.**
A01G 9/02 (2018.01)
A01G 9/24 (2006.01)
A01G 22/25 (2018.01)

(52) **U.S. Cl.**
CPC ***A01G 9/023*** (2013.01); ***A01G 9/247*** (2013.01); ***A01G 9/249*** (2019.05); ***A01G 22/25*** (2018.02)

(58) **Field of Classification Search**
CPC A01G 9/023; A01G 9/022; A01G 9/00; A01G 9/02; A01G 31/00; A01G 31/06
See application file for complete search history.

(56) **References Cited**

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Primary Examiner — Kristen C Hayes
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A system and method for using indoor vertical farming for cultivating tubers. The method and system include a wheeled framework with tiered platforms, the platforms forming multiple growing spaces for growing portions of a tuber crop and soil where the growing spaces are provided with irrigation and illumination. Each growing space has a paneled wheeled planter tray which rests on a platform and each portion of the tuber crop and soil can be extracted from each paneled wheeled planter tray by a lifting action to fall into a mesh covered container, used to separate the soil from the tuber crop.

6 Claims, 3 Drawing Sheets

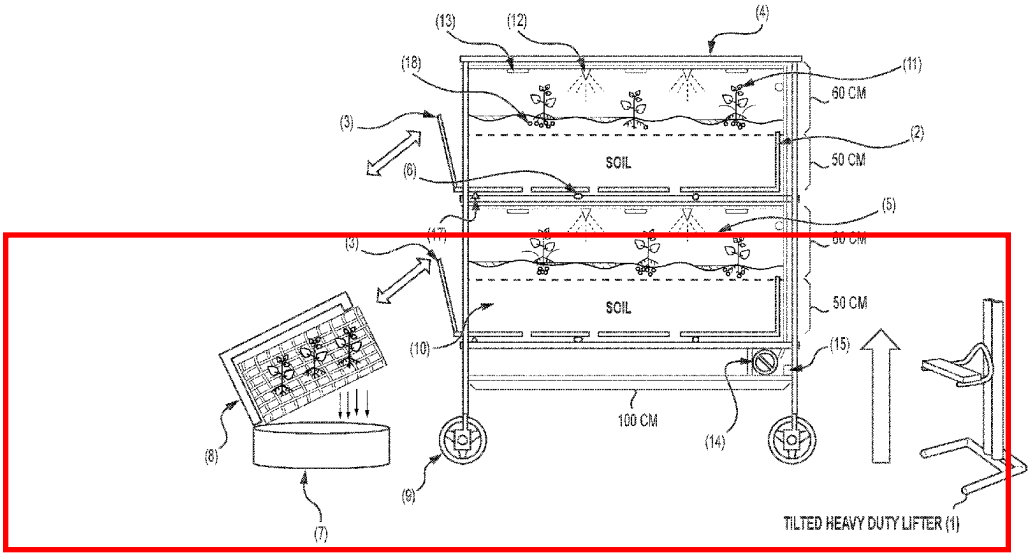

Exhibit A-11

U.S. Patent No.: 12116333

Issue Date: 2024-10-15

Title: 3,3'-(hydrazine-1,2-diyl)bis(1-(naphthalen-2-yloxy)propan-2-ol) as an ecofriendl...

US012116333B1

(12) **United States Patent**
Ali et al.

(10) **Patent No.: US 12,116,333 B1**
(45) **Date of Patent: Oct. 15, 2024**

(54) **3,3'-(HYDRAZINE-1,2-DIYL)BIS(1-(NAPHTHALEN-2-YLOXY)PROPAN-2-OL) AS AN ECOFRIENDLY INSECTICIDAL AGENT AGAINST SPODOPTERA LITTORALIS (BOISD.)**

(71) Applicant: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(72) Inventors: **Mai Mostafa Khalaf Ali**, Al-Ahsa (SA); **Hany Mohamed Abd El-Lateef Ahmed**, Al-Ahsa (SA); **Antar Ahmed Abdelhamid Ahmed**, Al-Baha (SA); **Mohamed A. Gad**, Giza (EG)

(73) Assignee: **KING FAISAL UNIVERSITY**, Al-Ahsa (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 10 days.

(21) Appl. No.: **18/511,800**

(22) Filed: **Nov. 16, 2023**

Related U.S. Application Data

(62) Division of application No. 18/238,694, filed on Aug. 28, 2023, now Pat. No. 11,891,353.

(51) **Int. Cl.**

C07C 243/14	(2006.01)
A01N 39/00	(2006.01)
A01P 7/04	(2006.01)
C07C 241/02	(2006.01)

(52) **U.S. Cl.**
CPC ***C07C 243/14*** (2013.01); ***A01N 39/00*** (2013.01); ***A01P 7/04*** (2021.08); ***C07C 241/02*** (2013.01)

(58) **Field of Classification Search**
CPC C07C 243/14; C07C 241/02; A01P 7/04; A01N 39/00
See application file for complete search history.

(56) **References Cited**

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CID 126468044; created Apr. 13, 2017.

Primary Examiner — Jared Barsky
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

A compound 3,3'-(hydrazine-1.2-diyl)bis(1-(naphthalen-2-yloxy)propan-2-ol), its synthesis, and its use as an insecticidal agent.

8 Claims, 1 Drawing Sheet

Exhibit A-12

U.S. Patent No.: 12194434

Issue Date: 2025-01-14

Title: Imidazolium ionic liquids made using cardanol extracted from cashew nutshell oil...

US012194434B1

(12) **United States Patent**
Atta et al.

(10) **Patent No.: US 12,194,434 B1**
(45) **Date of Patent: Jan. 14, 2025**

(54) **IMIDAZOLIUM IONIC LIQUIDS MADE USING CARDANOL EXTRACTED FROM CASHEW NUTSHELL OIL TO ENHANCE CRUDE OIL RECOVERY IN OILFIELDS**

(71) Applicant: **KING SAUD UNIVERSITY**, Riyadh (SA)

(72) Inventors: **Ayman M. Atta**, Riyadh (SA); **Hamad A. Al-Lohedan**, Riyadh (SA); **Abdelrahman O. Ezzat**, Riyadh (SA); **Ali K. Aldalbahi**, Riyadh (SA)

(73) Assignee: **KING SAUD UNIVERSITY**, Riyadh (SA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 25 days.

(21) Appl. No.: **18/612,504**

(22) Filed: **Mar. 21, 2024**

Related U.S. Application Data

(62) Division of application No. 18/212,034, filed on Jun. 20, 2023, now Pat. No. 11,969,708.

(51) **Int. Cl.**

H01M 4/48	(2010.01)
B01J 20/04	(2006.01)
B01J 20/06	(2006.01)
B01J 20/10	(2006.01)
B01J 20/26	(2006.01)
B01J 20/28	(2006.01)
B01J 20/30	(2006.01)
B01J 20/32	(2006.01)
C02F 1/28	(2023.01)
C02F 1/68	(2023.01)
C07D 233/60	(2006.01)
C08G 65/331	(2006.01)
C08G 65/333	(2006.01)
C08G 65/337	(2006.01)
E02B 15/04	(2006.01)
H01M 4/36	(2006.01)
C02F 101/32	(2006.01)
C02F 103/08	(2006.01)

(52) **U.S. Cl.**
CPC ***B01J 20/265*** (2013.01); ***B01J 20/043*** (2013.01); ***B01J 20/06*** (2013.01); ***B01J 20/103*** (2013.01); ***B01J 20/28009*** (2013.01); ***B01J 20/28016*** (2013.01); ***B01J 20/3085*** (2013.01); ***B01J 20/3204*** (2013.01); ***B01J 20/3221*** (2013.01); ***B01J 20/3287*** (2013.01); ***B01J 20/3293*** (2013.01); ***C02F 1/288*** (2013.01); ***C02F 1/681*** (2013.01); ***C07D 233/60*** (2013.01); ***C08G 65/3317*** (2013.01); ***C08G 65/33317*** (2013.01); ***C08G 65/337*** (2013.01); ***E02B 15/041*** (2013.01); *C02F 1/281* (2013.01); *C02F 1/285* (2013.01); *C02F 2101/32* (2013.01); *C02F 2103/08* (2013.01)

(58) **Field of Classification Search**
CPC B01J 20/043; B01J 20/06; B01J 20/103; B01J 20/28016; B01J 20/28009; B01J 20/3085; B01J 20/3221; B01J 20/3287; B01J 20/3293; C02F 1/288; C02F 1/681; C07D 233/60; C08G 65/33317; C08G 65/337; E02B 15/041
See application file for complete search history.

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Primary Examiner — Yong L Chu
(74) *Attorney, Agent, or Firm* — Nath, Goldberg & Meyer; Richard C. Litman

(57) **ABSTRACT**

Modified chemical structures of cardanol extracted from cashew nut shell oil, and the use of the same to prepare imidazolium ionic liquids (IILs). The IILs can be used to prepare different types of silica, magnetite and calcium carbonate nanoparticles (NPs) as multifunctional oilfield chemicals for use in various oil spill collection, de-emulsification, viscosity improvement, asphaltene dispersant, and enhanced oil recovery applications.

7 Claims, 13 Drawing Sheets