

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার  
পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর  
শিল্প মন্ত্রণালয়  
৯১, মতিঝিল বা/এ, ঢাকা-১০০০  
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নং-৩৬.০৮.০০০০.২০০.১৬.০০১.২২. ২০২২

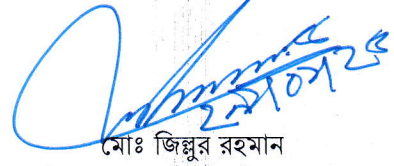
তারিখঃ ২৯/০১/২০২৫ খ্রি.

বিষয়ঃ দাখিলকৃত পেটেন্ট আবেদনসমূহ ওয়েবসাইটে প্রকাশ।

বাংলাদেশ পেটেন্ট আইন, ২০২২ এর ধারা ১৪(৬) অনুযায়ী ডিপিডিটিতে ২০২৩ সালের পেটেন্ট আবেদন নং ১৯৩, ২২২ এবং ২০২৪ সালের পেটেন্ট আবেদন নং ৩২, ৭৮, ৮৮, ১০১, ১১০, ১১১, ১৪১, ১৪৫, ১৯০, ১৯৫, ১৯৭, ২০৯, ২৫৯, ২৬৯, ২৮৩, ২৮৪, ২৯৩, ৩০২, ৩২৮, ৩৪৭ মোট ২২ (বাইশ) টি আবেদন নিম্নবর্ণিত তথ্যাদি সহ অধিদপ্তরের ওয়েবসাইটে ([www.dpdt.gov.bd](http://www.dpdt.gov.bd)) প্রকাশ করা হল।

- (ক) উদ্ভাবনের শিরোনাম;
- (খ) পেটেন্ট আবেদনকারী ও উদ্ভাবকের নাম;
- (গ) আবেদন দাখিলের তারিখ ও নম্বর;
- (ঘ) অগ্রাধিকার নম্বর ও তারিখ, যদি থাকে;
- (ঙ) পেটেন্ট এর শ্রেণিবিব্যাচন;
- (চ) উদ্ভাবনের মূল উপাদান চিত্রায়িত করে এইরূপ অংকন, যদি থাকে;
- (ছ) বিষয়বস্তুর সার-সংক্ষেপ।

সংযুক্তিঃ ৩০ (ত্রিশ) পাতা।



মোঃ জিবুর রহমান  
পরিচালক (পেটেন্ট ও শিল্প-নকশা)  
ফোনঃ +৮৮২২৩৩৫৭৮০২

অনুলিপিঃ

- ১। পরিচালক (সকল), পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর, ঢাকা।
- ২। সিস্টেম এনালিস্ট, পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর। (ওয়েবসাইটে প্রকাশের জন্য)
- ৩। উপ-পরিচালক (পেটেন্ট) (সকল), পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর, ঢাকা।
- ৪। মহাপরিচালক মহোদয়ের ব্যক্তিগত সহকারী, পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর, ঢাকা।

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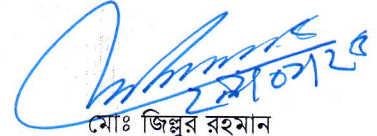
পেটেন্টের দাখিলকৃত আবেদনসমূহের প্রকাশনা  
**Publication of filed patent applications**

এতদ্বারা জানানো যাইতেছে যে, বাংলাদেশ পেটেন্ট আইন, ২০২২ এর ধারা ১৪(৬) মোতাবেক দাখিলকৃত পেটেন্ট আবেদনসমূহ প্রকাশ করা হইল। উল্লিখিত পেটেন্ট আবেদন সম্পর্কিত উদ্ভাবনের জন্য পেটেন্ট আবেদনের বিরোধিতা করিয়া যে কোন ব্যক্তি বা প্রতিষ্ঠান বিদ্যমান আইন মোতাবেক প্রকাশনার তারিখ হইতে ৯০ (নব্বই) দিনের মধ্যে নির্ধারিত ফরম এর মাধ্যমে বিরোধিতার নোটিশ দাখিল করিতে পারিবেন।

উক্ত প্রকাশনা সম্পর্কিত বা যে কোন তথ্য প্রাপ্তির নিমিত্ত, যে কেহ মহাপরিচালক, পেটেন্ট, শিল্প-নকশা ও ট্রেডমার্কস অধিদপ্তর বরাবর যোগাযোগ করিতে পারিবেন।

Notice is hereby given that the filed patent applications have been published on the website of DPDT under the section 14(6) of Bangladesh Patent Act, 2022. Any person/institution may file opposition against the published patent application(s) within 90 (Ninety) days, from the date of publication as per existing patent Act.

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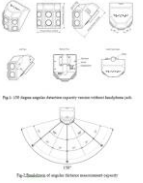


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**Publication of Filed Patent Application:  
No: 19 (Publication date: 29 January 2025)**

| ক্রমিক<br>নং<br>(Serial<br>no.) | উদ্ভাবনের শিরোনাম<br>(Title of the<br>Invention) | আবেদনকারী ও উদ্ভাবকের<br>নাম<br>Name of the<br>Applicant(s) &<br>Inventor(s) | আবেদন দাখিলের<br>তারিখ ও নম্বর<br>(Filing date &<br>Number) | অগ্রাধিকার নম্বর ও<br>তারিখ<br>Priority number<br>& Date | পেটেন্ট-এর<br>শ্রেণি<br>Classification<br>of Patent<br>(IPCs) | বিষয়বস্তুর সার-সংক্ষেপ<br>(Abstract)   | অংকন<br>(Drawing)   |
|---------------------------------|--|--|---|--|---|---|---|
| 1.                              | Abhash   | Drishti Technologies<br>Limited.   | 19/07/2023<br><br>BD/P/ 2023/193                            |  | A 61H 3/06  | <p>This patent application presents a groundbreaking invention in the field of assistive technology—a smart device for the white cane designed to empower visually impaired individuals with advanced object detection capabilities and enhanced sensory feedback. The smart device for the white cane utilizes ultrasonic technology, innovative signal processing techniques, and a comprehensive feedback system to provide real-time awareness of the user's surroundings. By leveraging a combination of ultrasonic sensors, haptic feedback, and auditory cues, the smart device for the white cane offers a multifaceted solution to address the mobility challenges faced by the visually impaired community.</p> <p>The smart device for the white cane features three ultrasonic sensors strategically positioned to achieve a remarkable 150-degree field of view. Each sensor possesses a detection capacity of 50 degrees, ensuring a comprehensive scanning range to identify potential obstacles and hazards. To optimize object detection efficiency and minimize blind spots, the sensors are sequentially activated</p> |  |

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|  |  |  |  |  | <p>through intelligent signal processing techniques. This activation strategy ensures that the user receives accurate and timely feedback about the environment, enabling safe and independent navigation.</p> <p>One of the core components of the smart device for the white cane is its haptic feedback system, which utilizes a vibration motor and a 5V buzzer. This system provides variable intensity feedback based on the proximity of detected objects within a predetermined range. When an obstacle is detected, the haptic feedback intensity increases, alerting the user to the presence and proximity of the object. This dynamic feedback mechanism empowers users to differentiate between objects at varying distances, promoting enhanced spatial awareness and informed decision-making during navigation.</p> <p>In addition to haptic feedback, the smart device for the white cane offers an optional auditory feedback feature. This feature is facilitated through a dedicated headphone jack, allowing users to connect headphones and receive spoken cues and guidance. By leveraging the power of sound, the auditory feedback system provides users with additional contextual information about their surroundings. The spoken cues are designed to be clear, concise, and tailored to the user's preferences, enhancing their overall situational awareness and promoting a more guided and confident navigation experience.</p> <p>The ergonomic design of the smart device for the white cane prioritizes user comfort and convenience. The device's dimensions, measuring 7.93cm in height and 7.43cm in width, ensure a compact and portable form factor. Furthermore, the left view angle of 40 degrees between the sonar sensors and the cane guarantees that the sensors remain vertical when the user holds the cane at a 40-degree</p> |  |
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|  |  |  |  |  | <p>angle. This design consideration ensures that the sonar sensors face forward, maximizing their effectiveness in detecting obstacles and providing accurate feedback to the user. The smart device for the white cane is equipped with additional features to enhance usability. The bottom view reveals the presence of a charging port, a switch, and M3 screw holes, providing convenient options for recharging and customization. Moreover, the axial view showcases the inner diameter of the cane clamp, measuring 13mm, which matches the outer diameter of the cane. This design facilitates easy attachment and stability when using the smart device for the white cane.</p> <p>The smart device for the white cane is powered by a rechargeable Lithium-ion battery, ensuring long-lasting performance and eliminating the need for frequent battery replacements. A battery level indicator keeps users informed about the remaining power, enabling proactive recharging and minimizing interruptions during use. The foldable nature of the cane further enhances portability, allowing for easy storage and transport when not in use.</p> <p>In summary, the smart device for the white cane described in this patent application represents a significant advancement in assistive technology for the visually impaired. By leveraging ultrasonic technology, innovative signal processing techniques, and a comprehensive feedback system, the smart device for the white cane empowers users with enhanced object detection capabilities and sensory feedback. The combination of haptic and auditory cues, along with the ergonomic design and portability, promotes independent and safe navigation for visually impaired individuals. This invention stands at the forefront of assistive technology, fostering inclusivity and enabling individuals to overcome mobility barriers with confidence and ease.</p> |  |
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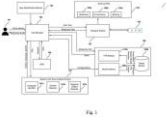
| ক্রমিক<br>নং<br>(Serial<br>no.) | উদ্ভাবনের শিরোনাম<br>(Title of the<br>Invention)           | আবেদনকারী ও উদ্ভাবকের<br>নাম<br>Name of the<br>Applicant(s) &<br>Inventor(s)  | আবেদন দাখিলের<br>তারিখ ও নম্বর<br>(Filing date &<br>Number) | অগ্রাধিকার নম্বর ও<br>তারিখ<br>Priority number<br>& Date | পেটেন্ট-এর<br>শ্রেণি<br>Classification<br>of Patent<br>(IPCs) | বিষয়বস্তুর সার-সংক্ষেপ<br>(Abstract)  | অংকন<br>(Drawing)                                |
|---------------------------------|--|---|---|--|---|--|--|
| 2.                              | An Artificial Intelligence-based Chatbot for Mental Health | Tasnim Tabassum; Marzia Akhter; Minhaz Us Salekeen Fahme; Minhaj Mohammad Mimo; Niamul Quader; Shahin Ahmed; Afia Adiba and stiaque Ahmed<br><br>Tasnim Tabassum; Marzia Akhter; Istiaque Ahmed; Minhaz Us Salekeen Fahme; Minhaj Mohammad Mimo; Niamul Quader; Shahin Ahmed and Afia Adiba | 30/08/2023<br><br>BD/P/ 2023/222                            |  | G 21H 20/10   | <p>This invention introduces an innovative artificial intelligence-based chatbot system designed to deliver personalized conversational assistance across various platforms, including websites, mobile applications, and messaging services. Leveraging cutting-edge natural language processing (NLP) and machine learning algorithms, the chatbot efficiently comprehends user queries and provides relevant responses. Extensively trained on diverse topics, it offers informed answers, recommendations, and task execution on behalf of users. The system continuously learns from user feedback and behavior, dynamically refining its responses to ensure ever-improving personalized support. The primary objective of this research is to offer users an efficient and convenient means of accessing information and executing tasks. As an indispensable tool for businesses aiming to enhance customer support services and individuals seeking prompt and accurate assistance, the</p> | <p>Figure 1: Overall pipeline of the chatbot</p> |

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|  |  |  |  |  |  | <p>chatbot's versatility and adaptability make it an effective virtual assistant. Its sophisticated understanding of natural language fosters intuitive and seamless interactions, making it accessible to users with varying levels of technological proficiency. Moreover, the system's ability to evolve through continuous learning empowers it to tailor its support to meet individual preferences, providing users with increasingly personalized and precise assistance. Overall, this research contributes to advancements in the field of conversational AI, presenting a powerful solution to streamline user interactions and elevate the efficiency and convenience of accessing information and performing tasks.</p> |  |
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|---------------------------------|---|--|---|--|---|---|---|
| 3.                              | A SYSTEM AND METHOD FOR OPTIMIZING A USER INTERACTION SESSION USING AN ADAPTIVE TEXT-TO-SPEECH ENGINE | Hishab Technologies Limited<br><br>Zubair Ahmed;<br>Mohammad Fayadan<br>Hossain; Rabindra Nath<br>Nandi and Tareq AI<br>Muntasir | 01/02/2024<br><br>BD/P/ 2024/32                             |  | H 04W 52/02   | A system and method for comprehensive adaptive text-to-speech implementation in dialect detection approach, comparing identified dialects with database models and assigning confidence score thresholds to subwords and keywords. It monitors speech signals for language, dialect, and gender differences, updating the user's speech profile accordingly. Utilizing keyword and sub-word identification, it parses complex natural language inputs, generating personalized accurate responses. This adaptive text-to-speech synthesis system enhances human-computer interactions through authentication, real-time analysis, and dynamic attribute adaptation, ensuring personalized and responsive experiences for users contributing to the system's adaptability and effectiveness in natural language conversations. |  |





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|---------------------------------|--|--|---|--|---|--|-------------------|
| 4.                              | Bacteriophage<br>Based<br>Electrochemical<br>Biosensor for<br>Detection of<br>Typhoid Pathogen | Dr. Md. Zaved Hossain<br>Khan, Associate Professor;<br>Dr. Munawar Sultana,<br>Professor; Dr. Md. Anwar<br>Hossain, Vice Chancellor;<br>Md Hasibul Hassan; Md.<br>Romzan Ali, Lecturer; Md.<br>Arifur Rahman and<br>Anamica Hossain, Lecturer<br><br>Dr. Md. Zaved Hossain<br>Khan, Associate Professor;<br>Dr. Munawar Sultana,<br>Professor; Dr. Md. Anwar<br>Hossain, Vice Chancellor;<br>Md Hasibul Hassan; Md.<br>Romzan Ali, Lecturer; Md.<br>Arifur Rahman and<br>Anamica Hossain, Lecturer | 21/03/2024<br><br>BD/P/ 2024/78                             |  | C 02F 1/467   | The detection of the typhoid pathogen, Salmonella enterica serotype Typhi (S. Typhi), holds massive clinical, public health, and epidemiological significance around the globe. Conventional diagnosis relies on bacterial isolation having a set of challenges when it comes to accurate detection, therapeutic intervention and disease management. Substantial reviews and reports exist on the advantages of bacteriophage-based biosensors (phagosensors) concerning Salmonella. However, phagobiosensor for Salmonella Typhi (typhoid pathogen) point of care detection at a lower limit of detection (LOD) has yet to be reported. This study is the earliest endeavor to develop a multi-wall carbon nanotubes (MWCNTs) based electrochemical phagobiosensor utilizing a unique bacteriophage SAL RIS as a biomolecular recognition element, selectively binding Salmonella Typhi DMS Al at LOD of 1 CFU/ml. S. Typhi DMS_Al, retrieved from patient's blood, consists of 10 pathogenicity islands and a wide range of efflux pump genes in its whole genome, which has not yet been documented for Salmonella. Subsequent screening for its |                   |

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|  |  |  |  |  | <p>specific bacteriophage from a sewage sample pinpointed the phage SAL RIS of class Caudoviricetes, family Autographiviridae and genus Teepamavirus. The whole genome and tail-fibre protein based alignment was close to Salmonella phage Vi06 covering 88.8% and 90% similarity respectively. SAL RIS exclusively binds S Typhi in a specific manner and also possess excellent genetic feature as a candidate for developing a highly sensitive electrochemical phagosensor. Therefore, it was covalently immobilized onto a modified SPE/MWCNT/PANI-based electrode surface, allowing charge-directed, oriented immobilization which then confirmed through scanning electron microscopy. The electrode surface was featured via field emission scanning electron microscopy, electrochemical impedance spectroscopy, and cyclic voltammetry. The pathogen detection process of the phagosensor is quick (20 minutes). It has exceptional selectivity for typhoid pathogens from blood, wastewater or within mixed populations, indicating the application of this proposed phagosensor in clinical settings as a rapid, alternative to available conventional detection techniques, and low-cost surveillance tool.</p> |  |
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|---------------------------------|--|--|---|--|---|---|-------------------|
| 5.                              | Reducing Electricity Consumption and Achieving Sustainability by Converting Capacitor Fans to Induction Fans | Bangladesh Industrial Development and Engineering Company (BIDEC)<br><br>Kazi Mohammad Ibrahim | 28/03/2024<br><br>BD/P/ 2024/88                             |  | F 03B 13/06   | <p>Globally, there is a shift towards cleaner energy to address the issue of declining fossil fuels. By lowering the carbon footprint, clean and renewable energy addresses two of the world's largest issues: the depletion of fossil fuels and global warming. The workaround, however, is to use more energy-efficient machinery that uses less electricity to generate equivalent or superior results as this process of converting to renewable energy is still in progress and quite costly.</p> <p>This is where our innovation comes in. The ceiling fan's energy consumption will be nearly 52% lower Thanks to our methodical replacement of the single-phase induction motor with a brushless direct current motor (BLDC). Our conversion process not only ensures energy saving but also by using the old fan's body part, it reduces wastages. Reducing the demand for carbon-based fuels will lessen the carbon footprint and also will cut the costs associated with operating these fans by nearly 52%.</p> |                   |



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|---------------------------------|---|--|---|--|---|--|-------------------|
| 6.                              | A Voice Operated Remotely Piloted Aircraft capable of taking Voice Command in Bangla. | Khalid Sifullah; SM Ishtiaq Ibn Salam; Tasdid Tahsin; Jolok Banerjee; Md. Hemal Ishak and Md. Burhan Uddin<br><br>Khalid Sifullah; SM Ishtiaq Ibn Salam; Tasdid Tahsin; Jolok Banerjee; Md. Hemal Ishak and Md. Burhan Uddin | 08/04/2024<br><br>BD/P/ 2024/101                            |  | B 64C 39/02   | This invention is a voice operated remotely piloted aircraft, designed to be controlled using Bangla voice commands. Communication between user devices and the drone's flight controller is facilitated through radio telemetry / IoT connectivity, allowing users to control it remotely from anywhere in the world with an internet connection. User devices range from Desktop/Laptop Computers to mobile phones, handheld/wearable devices etc. It also incorporates a Smart Virtual Assistant with Bangla talkback feature to ensure the proper execution of given commands and to provide real-time feedback to the user. All the above features are incorporated into one user friendly application software through proprietary code. |                   |



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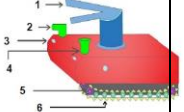
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|---------------------------------|---|---|---|--|---|---|-------------------|
| 7.                              | A Cover Based on Improved Thermal Function Capable of Withstanding Excessive Radiant Heat | Daffodil International University (DIU)<br><br>GOLAM RABBANY,<br>Lecturer, Dept. of<br>Computer Science &<br>Engineering, FSIT; EASIR<br>ARAFAT PRIME,<br>Student, Dept. of<br>Computer Science &<br>Engineering, FSIT and<br>OMAR FARUK, Assistant<br>Professor, Dept. of<br>Business Studies, FBE | 18/04/2024<br><br>BD/P/ 2024/110                            |  | H 10K 59/40   | Every year, fire accidents cause enormous damage to life and resources around the world. The maximum heat radiation exposure from the majority of massive fire accidents does not exceed 30 KW/m <sup>2</sup> . Several firefighting machines have been employed in different parts of the world, but they are inadequate for handling such high levels of energy. To enhance the firefighting capabilities of machines, we propose a novel four-layer cover with thermal functionality, capable of withstanding heat up to 30 KW/m <sup>2</sup> . This cover would be suitable for the body of firefighting equipment. The proposed cover has the outer layer (1st layer) and the inner layer (4th layer) of the cover is made of aluminum. The outer aluminum layer is affixed to an insulation sheet, forming the second layer. The third layer of the cover is a layer of water. A set of thermoelectric peltier module will be attached to the inner aluminum sheet for a better cooling system of the proposed cover. |                   |



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|---------------------------------|--|--|---|--|---|---|--|
| 8.                              | Rescue robot based<br>on fire accident           | Daffodil International<br>University (DIU)<br><br>GOLAM RABBANY,<br>Lecturer, Dept. of<br>Computer Science &<br>Engineering, FSIT; EASIR<br>ARAFAT PRIME,<br>Student, Dept. of<br>Computer Science &<br>Engineering, FSIT and<br>OMAR FARUK, Assistant<br>Professor, Dept. of<br>Business Studies, FBE | 18/04/2024<br><br>BD/P/ 2024/111                            |  | A 61B 34/30   | Fire accident result in significant harm to resources and a high number of fatalities. At the moment, a variety of firefighting robots have a significant influence on our contemporary society. These robots have a high heat tolerance capacity, which can save a great deal of lives and vital resources. The proposed dual-purpose firefighting and rescue robot integrates innovative features to enhance emergency response capabilities. The aerodynamic body design incorporates a water spray nozzle, CO2 exhausts, an oxygen mask holder, and a tank-tracked sprocket wheel system. The two-way hose model efficiently sprays six m3/minute of water or foam over long distances. Six infrared cameras ensure a 360-degree view for improved visibility in smoke-filled environments. The robot has oxygen supply system for fire victim. This comprehensive design ensures the robot's effectiveness in firefighting, rescue, and communication, contributing to improved safety and response in emergency situations. | <br>Figure 1: Structure of the proposed robot |



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|---------------------------------|--|--|---|--|---|---|-------------------|
| 9.                              | A method to use solar energy in Air Conditioner using hybrid model of solar energy along with grid power | WALTON Hi-Tech Industries PLC.<br>Md. Zweel Rana and Hasib Al – Ahmed        | 19/05/2024<br>BD/P/ 2024/141                                |  | F 24F 5/00  | This patent discloses an innovative air conditioning system that optimally integrates solar energy with grid power to enhance energy efficiency and reduce operational costs. The system comprises a dual power input mechanism that seamlessly consumes power from both solar photovoltaic (PV) panels and the conventional electrical grid when both are connected. The control unit employs advanced algorithms to monitor solar energy production, grid power consumption, and the cooling requirements of the air conditioning unit. By prioritizing solar energy usage when available and supplementing with grid power as needed, the system ensures continuous and efficient operation. Additionally, solar panel can be replaced by DC power source or battery cell. This hybrid approach not only reduces the dependency on grid power but also lowers the overall carbon footprint, making the air conditioning system both cost-effective and environmentally friendly. |                   |



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| 10.                             | Coatec Series -<br>Anticorrosive<br>Coating for<br>Enhanced Durability | Walton Corporation<br>Limited<br><br>Tanmoy Das                              | 21/05/2024<br><br>BD/P/ 2024/145                            |  | E 21B 43/16   | The Coatec Series by Walton Corporation Limited introduces a cutting-edge solution to address corrosion challenges in air conditioning systems, promising enhanced durability and longevity. The two forms of corrosion most common to Air Conditioner equipment's are known as localized (galvanic, pitting, or formicary corrosion) and general corrosion. Each of these corrosion types can lead to equipment failure, depending on conditions and the material systems used. Through meticulous engineering, this series incorporates advanced anticorrosive coatings applied to critical components such as evaporator hairpins, outdoor unit condensers, and brazing points. These coatings form a robust protective barrier, shielding copper and aluminum surfaces from corrosive elements in diverse environments by using epoxy coating. Epoxy paint offers an excellent resistance to seawater. Good resistance to humid and heat, and to salt spray, excellent resistance to water, oil, alkali, weak acid and salt water, tough and smooth film with anti-mildew and antifouling properties, favorable impact and abrasion resistance, as well as excellent adhesion. With superior |                   |

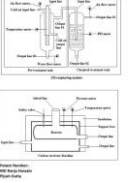


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|  |  |  |  |  |  | chemical resistance, tight adhesion, and proven durability, the Coatac Series ensures long-lasting performance and minimal maintenance requirements. Supported by detailed claims and inventive steps, this innovation redefines industry standards, offering customers peace of mind and reliability in residential, commercial, and industrial applications globally. |  |
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|---------------------------------|---|--|---|--|---|--|---|
| 11.                             | Generate the highest value from solid household waste by eco-friendly thermochemical technology | MD Ranju Hossain,<br>Deputy Managing Director<br>and Pijush Dutta, Director<br><br>MD Ranju Hossain,<br>Deputy Managing Director<br>and Pijush Dutta, Director | 23/06/2024<br><br>BD/P/ 2024/190                            |  | F 23G 5/027   | Global urban and rural communities have a significant problem with solid waste management (SWM), which has an effect on resource conservation, public health, and environmental quality. Thermochemical technologies offer a promising solution for the efficient management of solid waste, addressing both environmental concerns and resource recovery. This study delves into the application of thermochemical processes such as pyrolysis, gasification, and incineration for solid waste management. These technologies convert waste materials into valuable by-products like bio-fuel, bio-char, petrol, petroleum gas, activated-carbon contributing to energy recovery and reducing landfill dependency. The paper discusses the operational principles, advantage associated with each thermochemical method, emphasizing their potential to transform waste into renewable energy sources. The study also explores advancements in technology and process optimization that enhance the economic viability and environmental performance of thermochemical waste treatment .Through case studies from different |  |

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|  |  |  |  |  |  | regions, this research demonstrates successful implementations of thermochemical technologies in solid waste management, showcasing their role in promoting a circular economy. Policy implications and recommendations for integrating these technologies into existing waste management frameworks are provided to guide future development and deployment. The findings suggest that thermochemical technologies, supported by robust policy measures and technological innovation, can significantly contribute to sustainable solid waste management by converting waste into valuable resources and mitigating environmental impact. |  |
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|---------------------------------|---|--|---|--|---|--|-------------------|
| 12.                             | Offline diagnosis, monitoring and controlling system for residential air conditioner with smart mobile application. | WALTON Corporation Limited<br><br>Md. Zweel Rana and Muzahidul Islam         | 23/06/2024<br><br>BD/P/ 2024/195                            |  | B 60H 1/00  | Technology is a never-ending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. We can control different electrical appliances using Smart Phone with the help of Bluetooth Technology, Air Conditioner is one of them. Previously we have launched IR Remote and Wi-Fi connected smart air conditioner to operate. In the IR (InfraRed) Remote technology the line of sight should be maintained to operate the air conditioner. This limitation is uprooted with the help of Wi-Fi Module in which air conditioner can be operated from anywhere around the world using Smart Phones App via internet connection. Here, the limitation is the Data (Internet) connection requirement. But as we developed Bluetooth communication using the Smart Phones App to operate the air conditioner, instruction command can be sent directly to the Air Conditioner and process commands according to that. |                   |



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|---------------------------------|--|--|---|--|---|--|-------------------|
| 13.                             | BALL HEADED<br>CAUTERY<br>INSTRUMENT             | Professor Dr. Md.<br>Kamruzzaman KHAN<br><br>Professor Dr. Md.<br>Kamruzzaman KHAN | 23/06/2024<br><br>BD/P/ 2024/197                            |  | A 61B 18/14   | A ball head cautery instrument (100) is disclosed comprising a ball head electrode (130), a control valve (160), and an insulated tube (140) having a first part (170) and a second part (180), wherein the first part is operably coupled to the ball head electrode to form a continuous elongated shaft and the second part is configured to arrange an electrode connection (150) and the control valve, said ball head electrode is at a distal end (120) and the control valve is at a proximal end (110) of the instrument, and the ball head electrode is configured to make contact with tissues, irrigate tissues with a fluid, and extract the residual cauterized tissues. |                   |



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|---------------------------------|--|--|---|--|---|--|-------------------|
| 14.                             | Business profitable<br>carbon capture<br>syatem  | Pijush Dutta, Director; MD<br>Ranju Hossain, Director<br>and MD Safiqul Islam,<br>Director<br><br>Pijush Dutta, Director; MD<br>Ranju Hossain, Director<br>and MD Safiqul Islam,<br>Director | 08/07/2024<br><br>BD/P/ 2024/209                            |  | B 01D 53/14   | A system and method for capturing carbon dioxide are disclosed, combining the use of Spirulina and Monoethanolamine (MEA). The system comprises a bioreactor for cultivating Spirulina to absorb CO <sub>2</sub> through photosynthesis and a chemical absorption unit containing MEA for additional CO <sub>2</sub> capture. This hybrid approach enhances CO <sub>2</sub> absorption efficiency, providing a sustainable and scalable solution for carbon sequestration. |                   |



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|---------------------------------|---|--|---|--|---|---|---|
| 15.                             | Automatic Service Notification for Refrigerators Utilizing IoT Data | WALTON Corporation Limited<br><br>Pritom Mojumder and Mohammed Al Fahad      | 29/08/2024<br><br>BD/P/ 2024/259                            |  | F 25D 23/06   | The patents describe a system and method for offering service to refrigerator customers for their refrigerator product before they ask for it. The system simply collects data from IoT based refrigerator where a IoT Cloud manages the whole system of network. This invention utilizes the IoT data and a scanner program periodically scan the data and when the system detects conditions indicating the need for maintenance service the customer is notified through phone call, app notification, and SMS. The system is designed to enhance the customer satisfaction by providing timely and accurate service alerts, thus preventing unexpected product failures, extending the overall lifespan of the smart product. |  |



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|---------------------------------|---|---|---|--|---|---|---|
| 16.                             | DIU Multi-Stage<br>Vacuum Dryer with<br>Integrated Air<br>Ejector | Daffodil International<br>University<br><br>Md. Nawal Sarwer,<br>Lecturer; Dr. Md.<br>Mahbubur Rahman,<br>Associate Professor;<br>Tajnuba Sharmin, Lecturer<br>and Dr. Md. Bellal<br>Hossain, Professor | 11/09/2024<br><br>BD/P/ 2024/269                            |  | F 02C 3/32  | A multi-stage vacuum dryer with an air ejector system for drying fruits and vegetables, comprising a drying chamber, an air ejector, a multistage centrifugal pump, and a control system. |  |





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|---------------------------------|--|--|---|--|---|--|-------------------|
| 17.                             | Extraction of Gold<br>from<br>Microprocessor     | Bangladesh Council of<br>Scientific and Industrial<br>Research (BCSIR)<br><br>Tasnuva Zahan Liza,<br>Research Assistant ; Dr.<br>Aninda Nafis Ahmed,<br>Project Director & Senior<br>Engineer; Dr. Md. Abdul<br>Gafur, Chief Scientific<br>Officer (Retired) ; Shad<br>Inquiad Mim, Engineer<br>and Md. Abdus Sabur,<br>Scientific Officer | 18/09/2024<br><br>BD/P/ 2024/283                            |  | C 22B 11/00   | In this research, a simple and optimized technique for recovering gold from computer microprocessor was invented. Microprocessor pins contain higher concentration of gold than the other parts of the microprocessor. The pins are separated from the microprocessors by using heat flow. For extracting gold from microprocessor pins, a hydrometallurgical process is followed. An optimized concentration of nitric acid and specific temperature are used for chemical treatment. Gold flakes are separated from the microprocessor pins after chemical treatment and filtration, drying, calcining, and sieving are performed to achieve pure gold. Initially, Hand Held X-ray Florescence is utilized and 82.63% gold is detected in the gold flakes after leaching. For more accurate characterization, Scanning Electron Microscope (SEM), Energy Dispersive Spectroscopy (EDS), and X-ray Diffraction (XRD) are performed. From SEM-EDS analysis, the composition and morphological structure of gold flakes are executed. Moreover, XRD result of the gold flakes shows peaks of pure gold. |                   |



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|---------------------------------|--|--|---|--|---|--|-------------------|
| 18.                             | Extraction of Gold<br>from Random<br>Access Memory | Bangladesh Council of<br>Scientific and Industrial<br>Research (BCSIR)<br><br>Tasnuva Zahan Liza,<br>Research Assistant ; Dr.<br>Aninda Nafis Ahmed,<br>Project Director & Senior<br>Engineer; Dr. Md. Abdul<br>Gafur, Chief Scientific<br>Officer (Retired) ; Md.<br>Shofiqul Islam, Scientific<br>Officer and Monira Binte<br>Mesbah, Scientific Officer | 18/09/2024<br><br>BD/P/ 2024/284                            |  | C 22B 11/00   | For the enhancement of environmental and economic benefits of E-waste processing, this research aims to extract precious metal gold from Random Access Memory (RAM). RAM's contacts (plated fingers) contain a higher concentration of gold than the other parts. Primarily, Hand-Held X-Ray Fluorescence detects the metals in RAM contacts and 48.69% of gold is detected on average before leaching. In order to liberate gold from these computer parts, a hydrometallurgical process is used. RAM's contacts are separated manually by cutting. Nitric acid is used for chemical treatment to separate gold flakes from RAM's contact. Gold flakes are separated from the contacts within 3 hours at 30°C with 200 rpm stirring. After filtration, drying, and sieve analysis, gold flakes are collected. For characterization, Hand-held X-ray Fluorescence, Scanning Electron Microscope (SEM), Energy Dispersive Spectroscopy (EDS), and X-ray Diffraction (XRD) are performed. The morphology and composition of the gold flakes are determined from SEM-EDS analysis. This analysis shows 90% gold on in computer RAM on average. From the |                   |

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  | XRD data, peaks of gold are determined in gold flakes extracted from RAM contacts. |  |
|--|--|--|--|--|--|--|--|



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|---------------------------------|--|--|---|--|---|--|--|
| 19.                             | Smart Locker<br>Suitable for Public<br>Places    | Daffodil International<br>University<br><br>Md. Taslim Arefin,<br>Associate Professor and<br>Head; Dipto Biswas,<br>Lecturer; Md Awsaf Iqbal<br>Chowdhury, Student and<br>Hossain Simum Anon,<br>Student | 26/09/2024<br><br>BD/P/ 2024/293                            |  | G 06F 21/32   | The present invention relates to a smart locker system designed to revolutionize traditional storage solutions by integrating advanced technologies for enhanced security, convenience, and operational efficiency. The system employs a combination of biometric authentication, and dynamic allocation algorithms to provide secure access control and optimize space utilization. Contactless operations and self-cleaning mechanisms ensure hygiene and user safety, while real-time monitoring and data analytics offer actionable insights for optimizing locker operations. The scalable architecture allows for easy expansion and integration with third-party systems, making it suitable for various environments and applications. Overall, the smart locker system represents a significant advancement in storage technology, offering a user-friendly, energy-efficient solution that meets the evolving needs of modern-day users. | <br>Figure 1: A Demonstration of a SMART Locker |



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|---------------------------------|--|--|---|--|--|---|-------------------|
| 20.                             | APPARATUS AND<br>METHOD FOR<br>DETECTION OF<br>TEXTILE DEFECTS<br>IN CIRCULAR<br>KNITTING<br>MACHINE | COUNTAI PRIVATE<br>LIMITED<br><br>Harshavardhan Thirupathi<br>and Venkataramanan<br>Chockalingam | 06/10/2024<br><br>BD/P/ 2024/302                            |  | B 65B<br>17/00   | The present invention relates to an apparatus and method for detecting textile defects in a circular knitting machine. The apparatus 100 comprising one or more cameras 114 in which each camera is positioned on a fixed part 122 of the apparatus 100 and configured to capture one or more images of the fabric 104. One or more light sources 120 that are positioned on rotating part 124 or static part of the apparatus 100 and adapted to illuminate the fabric 104 such that each camera of the one or more cameras 114 captures the images of the fabric 104. One or more light guiding devices 134, each light guiding device positioned on at least one rotating part 124 such that luminance provided by the one or more light sources 120 is directed at the visible range of the one or more cameras 114. A processing unit 130 that is communicatively coupled with the one or more cameras 114 and one or more light sources 120 and configured to receive the one or more images captured by each camera of the one or more cameras 114, compare one or more parameters associated with the captured image with a predetermined parameter and alert a user upon breaching the predetermined the parameters. |                   |



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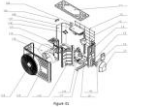
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|---------------------------------|--|--|---|--|---|---|-------------------|
| 21.                             | A System for Customizing News to Prevent Negative Impacts on Mental Well-being | Istiaque Ahmed; Minhaz Us Salekeen Fahme; Minhaj Mohammad Mimo; Niamul Quader and Shahin Ahmed<br><br>Istiaque Ahmed; Minhaz Us Salekeen Fahme; Minhaj Mohammad Mimo; Niamul Quader and Shahin Ahmed | 04/11/2024<br><br>BD/P/ 2024/328                            |  | G 16H 20/70   | The present invention relates to a system and method for delivering personalised news content with a focus on promoting positive mental well-being. The system filters news content through psychological and artificial intelligence-driven mechanisms to customise feeds based on user preferences, age, and interests. Additionally, the content is categorised and rated by mental health professionals to ensure its suitability, particularly for sensitive groups such as children. The invention further includes the capability to censor harmful content and provide news that fosters positivity, helping individuals avoid harmful news overload and improve their mental health. |                   |



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| ক্রমিক<br>নং<br>(Serial<br>no.) | উদ্ভাবনের শিরোনাম<br>(Title of the<br>Invention)  | আবেদনকারী ও উদ্ভাবকের<br>নাম<br>Name of the<br>Applicant(s) &<br>Inventor(s)  | আবেদন দাখিলের<br>তারিখ ও নম্বর<br>(Filing date &<br>Number) | অগ্রাধিকার নম্বর ও<br>তারিখ<br>Priority number<br>& Date | পেটেন্ট-এর<br>শ্রেণি<br>Classification<br>of Patent<br>(IPCs) | বিষয়বস্তুর সার-সংক্ষেপ<br>(Abstract)  | অংকন<br>(Drawing)   |
|---------------------------------|---|---|---|--|---|--|---|
| 22.                             | Open-Range<br>Cooling System for<br>Enhanced Comfort<br>in Open and<br>Enclosed Spaces. | WALTON Hi-Tech<br>Industries PLC.<br><br>(1) Ariful Isoam,<br>Bangladesh national, and<br>(2) Abdul Aowal,<br>Bangladeshi national, | 18/11/2024<br><br>BD/P/ 2024/347                            |  | B 64D 11/06   | <p>The new concept discussed here covers an open range cooling system suited for use in the open as well as enclosed space. It is a device which features a combination of an evaporator and a condenser that allows extending the cooling reach outdoors at events and social gatherings, as well as in tighter areas. Air that is much cooler than the prevailing temperature is drawn up from the enclosures by means of an axial flow fan mounted in the evaporator unit, which enhances airflow and increases cooling area. Due to its absorbed heat through the evaporator and released it via the condenser, the system operates employing a closed-loop refrigeration cycle, enabling resolution the temperature of air reemitted. For internal applications, the system is modified as per required configuration. Its combination of being portable and versatile allows it to be used in different application areas while providing a method for addressing cooling requirements in open and mixed mode application areas.</p> |  |