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सत्यमेव जयते

Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
Office of the Controller General of Patents, Designs & Trade Marks (O/o CGPDTM)

BOUDDHIK AAGMAN

An Induction Journey at IP Office

Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
Office of the Controller General of Patents, Designs & Trade Marks (O/o CGPDTM)

Structure of Patent Specification and Its Understanding

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Bouddhik Aagman

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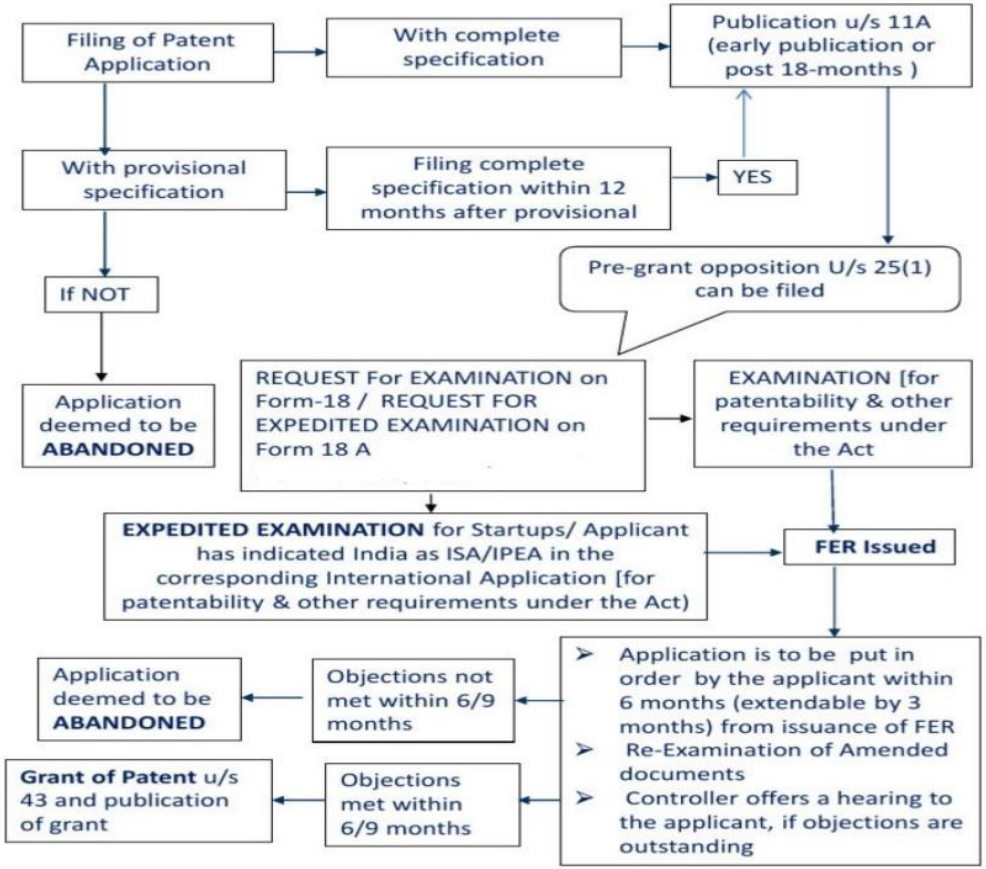
1. Patent Flow Chart



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Who can apply for patent

An application for a patent for an invention may be made by any of the following persons:

- by any person claiming to be the true and first inventor of the invention;
- by any person being the assignee of the person claiming to be the true and first inventor in respect of the right to make such an application;
- by the legal representative of any deceased person who immediately before his death was entitled to make such an application.

Either alone or jointly with any other person

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Types of Patent Applications

- **Ordinary Application** i.e., an application which has been filed directly in the Indian Patent Office without claiming priority of any foreign application.
- **Convention Application** claiming the priority of a country which is a member to Paris Convention
- **PCT National Phase Application**.
- **Divisional Application**, i.e, a further application divided out of the first- mentioned patent application.
- **Patent of Addition** i.e. an application for patent in respect of any improvement in or modification of the invention for which the patent application has already been filed or patent has been granted.

NUMBERING SYSTEM OF PATENT APPLICATION

Patent Application Number	DEFINITIONS
: YYYYJTNNNNNN "YYYY" denotes four digit fixed length Year of filing "J" denotes fixed length single digit Jurisdiction* in numerals "T" denotes fixed length single digit Type of Application** in numerals "NNNNNN" denotes 6 digits fixed length common continuous running serial number applicable for all Patent Offices in India	Jurisdiction 1 = Delhi 2 = Mumbai 3 = Kolkata 4 = Chennai **Type of Application 1 = Ordinary 2 = Ordinary-Divisional 3 = Ordinary-Patent of Addition 4 = Convention 5 = Convention-Divisional 6 = Convention-Patent of Addition 7 = PCT NP 8 = PCT NP-Divisional 9 = PCT NP-Patent of Addition

NUMBERING SYSTEM OF RQ

Request for Examination u/r 24B (1) (i) (Normal):	Request for Examination u/r 20 (4) (ii) (Express):	Request for Examination u/r 24C (expedited)
RYYYYJNNNNNN "R" denotes Request for examination u/r 24B (1) (i) "YYYY" denotes four digit fixed length "Year of filing" "J" denotes Jurisdiction for Patent Application against which Request of Examination has been filed "NNNNNN" denotes 6 digits fixed length common continuous running serial number* applicable for all Patent Offices in India	XYYYYJNNNNNN "X" denotes Request for examination u/r 20 (4) (ii) "YYYY" denotes four digit fixed length "Year of filing" "J" denotes jurisdiction of Patent Application against which Request of examination has been filed "NNNNNN" denotes 6 digits fixed length common continuous running serial number* applicable for all Patent Offices in India	EYYYYJNNNNNN "E" denotes Request for examination u/r 24C "YYYY" denotes four digit fixed length "Year of filing" "J" denotes jurisdiction of Patent Application against which Request of examination has been filed "NNNNNN" denotes 6 digits fixed length common continuous running serial number* applicable for all Patent Offices in India

Publication of a Patent Application

In India, after a patent application is filed with the **Indian Patent Office (IPO)**, it undergoes a **formal publication process**. The primary objective of this publication is to make the details of the application publicly available, thereby informing the public about the existence of the patent application, its claims, and its specifications.

- **Section 11A of the Patents Act, 1970** mandates that a patent application will be published within **18 months** from the priority date (which is the filing date of the application or the earliest claimed priority date).
- Relevant Section

11A. Publication of applications.—

(1) Save as otherwise provided, no application for patent shall ordinarily be open to the public for such period as may be prescribed.

(2) The applicant may, in the prescribed manner, request the Controller to publish his application at any time before the expiry of the period prescribed under sub-section (1) and subject to the provisions of sub-section (3), the Controller shall publish such application as soon as possible.

(3) Every application for a patent shall, on the expiry of the period specified under sub-section (1), be published, except in cases where the application—

(a) in which secrecy direction is imposed under section 35; or

(b) has been abandoned under sub-section (1) of section 9; or

(c) has been withdrawn three months prior to the period specified under sub-section (1).

(4) In case a secrecy direction has been given in respect of an application under section 35, then it shall be published after the expiry of the period prescribed under sub-section (1) or when the secrecy direction has ceased to operate, whichever is later.

(4) In case a secrecy direction has been given in respect of an application under section 35, then it shall be published after the expiry of the period prescribed under sub-section (1) or when the secrecy direction has ceased to operate, whichever is later.

(5) The publication of every application under this section shall include the particulars of the date of application, number of application, name and address of the applicant identifying the application and an abstract.

(6) Upon publication of an application for a patent under this section—

(a) the depository institution shall make the biological material mentioned in the specification available to the public;

(b) the patent office may, on payment of such fee as may be prescribed, make the specification and drawings, if any, of such application available to the public.

(7) On and from the date of publication of the application for patent and until the date of grant of a patent in respect of such application, the applicant shall have the like privileges and rights as if a patent for the invention had been granted on the date of publication of the application:

Provided that the applicant shall not be entitled to institute any proceedings for infringement until the patent has been granted:

Provided further that the rights of a patentee in respect of applications made under sub-section (2) of section 5 before the 1st day of January, 2005 shall accrue from the date of grant of the patent: Provided also that after a patent is granted in respect of applications made under sub-section (2) of section 5, the patent-holder shall only be entitled to receive reasonable royalty from such enterprises which have made significant investment and were producing and marketing the concerned product prior to the 1st day of January, 2005 and which continue to manufacture the product covered by the patent on the date of grant of the patent and no infringement proceedings shall be instituted against such enterprises.

Particulars of Publication

The Patent Office Journal is published on every Friday with the following particulars in respect of application:

- Application number
- Country
- Date of filing
- Publication date
- Title of invention
- International Patent Classification
- Priority details like priority document number, priority date, Priority country, International Application No. and Filing date, etc.

Particulars of Publication

- Name and address of the applicant
- Name of the inventor(s)
- Reference in respect of Patent of Addition shall be the application number and filing date of the main application.
- Reference in respect of Divisional Application shall be the application number and filing date of the of the first mentioned application
- Abstract
- No. of pages
- No. of claims

Particulars of Publication

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :10/01/2024

(21) Application No.202411001911 A

(43) Publication Date : 24/01/2025

(54) Title of the invention : AN ADVANCE NATURAL DISASTER SENSING SYSTEM AND THE METHOD OF SENSING THEREOF

(51) International classification	:G01V0001000000, E04H0009020000, G08B0021100000, G01V0001300000, G01V0001240000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention relates to an advanced natural disaster sensing system (100) intended to detect, analyze, and map electromagnetic wave parameters indicative of precursor seismic activity. The natural disaster sensing system comprises a machine body (6) comprises a signal confirm stand (8) for detecting electromagnetic waves, a magnitude confirm stand (9) for measuring wave intensity, and a distance-direction stand (10) for locating the source of the waves. A first power board (2) is connected to the earth (1) via copper wiring to receive and distribute electrical power. A second power board (3) acts as an intermediary distributor, while a bio-organic filter (4) eliminates noise and enhances signal accuracy. A switched mode power supply (5) converts AC to DC power. A signal map (7) visually displays electromagnetic wave data, such as magnitude, direction, and distance. This system (100) ensures real-time, accurate disaster monitoring, enabling efficient response to impending natural disasters.

No. of Pages : 39 No. of Claims : 10

Date of Publication

- It is a significant milestone in the life of a patent application. It marks the moment when the contents of the application are made public and can be scrutinized by anyone with interest.
- The **date of publication** can be calculated as 18 months from the **priority date** (the date of filing or any earlier claimed priority) of the patent application. For example, if an application is filed on **January 1, 2024**, the 18 months timeline will be **July 1, 2025**.
- In cases where **early publication** is requested, the publication can occur sooner, but this requires the applicant to file a request with the IPO along with the prescribed fee. The **early publication** will occur ordinarily within a **month** of the filing date.
- If the applicant does not request early publication, the IPO will automatically publish the application within the 18-month timeline unless there is a **secrecy order** preventing such publication.

Effect of Publication

- Right to File for a Patent
- Prevention of Further Publication
- Increased Scrutiny and Potential Objections
- Provisional Rights (If Granted)
- Public Disclosure and Commercial Use
- No patent shall be granted before the expiry of six months from the date of publication of the application.

What is a Patent Specification

A patent specification is a “**techno-legal**” document which provides **detailed disclosure** about the invention to the **public**.

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Why techno-legal?

1. **Technical** because it provides technical details about the inventions.
2. **Legal** because it defines the legal limits of the invention, i.e. it defines the boundaries or scope of coverage of the invention which determine the legal consequences when it comes to the prosecution/litigation of the patent application.

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Why to file a Patent Specification?

The idea behind filing a patent specification is to grant the patentee a time-limited monopoly on the invention in exchange for full disclosure of the invention details. This time-limited monopoly (also referred to as patent term) lasts for 20 years from the date of filing in India.

Why to file a Patent Specification?

Section 7(4) of the Patents Act, 1970 mandates that every patent application shall be accompanied by a **provisional** or a **complete** specification.

Section 7(4)

"*Every such application (not being a convention application or an application filed under the Patent Cooperation Treaty designating India) shall be accompanied by a provisional or a complete specification*"

Types of a Patent Specification

1.Provisional Specification

2. Complete Specification

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Provisional Specification

A Provisional Specification is filed when an inventor has an initial idea of his invention or has a working prototype but has not yet completed the full development or testing. It encompasses a broad description of the invention and details available at the preliminary stage, sufficient to disclose the invention but not detailed enough to ascertain its workability. It serves to secure the filing date and establish priority for the invention.

Key Features

- The provisional specification is not a complete description of the invention but outlines the broad concept and general features of the invention.
- A provisional specification may not include formal claims but may contain a brief description of the invention and its novel and inventive aspects.
- The filing date of the provisional specification is considered the **priority date** for the patent application, meaning the applicant has secured their place in the queue for patent protection.
- Provisional specification can only be filed in case of an Ordinary application.

Key Features

- For the application other than Ordinary application, the option of filing provisional specification is not available in India, and can only be utilized if India is the office of first filing.

- It means if an applicant intends to file the first application (or the priority application) in India and subsequently files applications in other countries (via PCT or Paris Convention Route) claiming this priority date, they may get benefit from this provision. However, if the first application (or the priority application) is filed in a country other than India, then the applicant cannot file a provisional specification for the same application, and will instead need to file the National phase application in India with the complete specification.

- Provisional specification cannot be filed in case of a Divisional, Patent of Addition, Convention or PCT National Phase Application.

Contents of Provisional Specification

a. A provisional specification shall essentially contain **the title and description** of the invention.

b. The description starts from the second page, the first page being Form-2, starting with the field of invention, background of the invention, object of the invention and statement of the invention.

c. provisional specification includes as much information the applicant possesses, at the time of filing. It discloses the invention in a conceptual stage with additional details to be provided later in complete specification.

d. A provisional specification may or **may not contain Claims**.

e. It may be noted that a provisional specification cannot be filed in case of a Divisional, Patent of Addition, Convention or PCT National Phase Application.

Complete Specification

A Complete Specification is a **detailed and final** description of the invention. It includes all the necessary information for a person skilled in the art to understand, make, and use the invention. The complete specification is a crucial document filed during the patent application process. It is a comprehensive description of the invention, which is required to **disclose all the technical details necessary** for someone skilled in the relevant field to reproduce and use the invention. **Filing a complete specification is mandatory** in order to obtain a patent, and it forms the basis for assessing the patentability of the invention.

Complete Specification

a. The applicant may choose to file a complete specification directly without filing a provisional specification first.

b. However, if a provisional specification is filed by the applicant, a complete specification is necessary for the patent examination process to commence. In such a scenario, the Complete specification is required to be filed within 12 months after the provisional specification is filed.

Contents of Complete Specification

a. fully and particularly describe the invention and its operation or use and the method by which it is performed;
b. disclose the best method of performing the invention which is known to the applicant and for which he is entitled to claim protection;
c. end with a claim or set of claims defining the scope of the invention for which the protection is claimed;
d. be accompanied by an abstract;
e. not include irrelevant or other matter, not necessary for elucidation of the invention, from the title, description, claims and drawings.

Procedure to file a Patent Specification in India: PS or CS

Provisional or Complete Specification shall be submitted in Form-2 [Rule 13(1)] along with the Application Form-1 and other documents accompanied with the prescribed fee as given in the First Schedule of Patents Rules, 2003.

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FORM 2
THE PATENT ACT 1970
(39 of 1970)
&
The Patents Rules, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See section 10 and rule13)

1. TITLE OF THE INVENTION

2. APPLICANT (S)
(a) NAME:
(b) NATIONALITY:
(c) ADDRESS:

3. PREAMBLE TO THE DESCRIPTION

PROVISIONAL	COMPLETE
The following specification describes the invention.	The following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION *(Description shall start from next page.)*

5. CLAIMS (not applicable for provisional specification. Claims should start with the preamble — **"I/we claim"** *on separate page*)

6. DATE AND SIGNATURE (to be given at the end of last page of specification)

7. ABSTRACT OF THE INVENTION (to be given along with complete specification on separate page)

Procedure to file a Patent Specification in India: PS or CS

The first page of Form-2 shall contain:

a) Title of the invention;

b) Name, address and nationality of each of the applicants for patent;

Procedure to file a Patent Specification in India: PS or CS

c) Preamble to the description:

i) If the provisional specification is filed, the Preamble shall be as under:

“ The following Specification describes the invention”.

ii) If the complete specification is filed, the Preamble shall be as under:

“ The following specification particularly describes the invention and the manner in which it is to be performed.”

Legal Provision related to PS and CS

- Once a provisional specification is filed, the applicant has **12 months** to file the Complete Specification. If the complete specification is not filed within 12 months, the application is deemed **abandoned** [Section 9(1)].

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Legal Provision related to PS and CS

- If in the opinion of the Controller, two or more provisional specifications filed by an applicant are cognate, or if one is a modification of the other, he may allow the applicant to file one complete specification in respect of all such provisional specifications. Such a complete specification shall have to be filed within twelve months from the date of filing of the first provisional application. In such cases, date of filing of the application is the date of filing of the earliest provisional specification and shall bear the number of that application [Section 9(2)].

Legal Provision related to PS and CS

- An applicant, within twelve months from the filing of a complete specification (not being a convention application or PCT National Phase Application), may request the Controller to convert the complete specification so filed to a provisional specification. Consequently, the applicant has to file a complete specification within twelve months from the date of first filing. [Section 9(3)].

Legal Provision related to PS and CS

- After filing a complete Specification, the applicant may request the Controller at any time before grant of patent to cancel the provisional specification (i.e. the one filed directly u/s 9 (1) or the one converted from a complete specification (u/s 9 (3)), the Controller may cancel the provisional specification and post-date the application to the date of filing of the complete specification [Section 9(4)].

Differences between Provisional and Complete Specification

Feature	Provisional Specification	Complete Specification
Purpose	Secure filing date, and disclose general aspects.	Full disclosure, defines scope of protection.
Claims	Not necessary.	Must contain formal claims.
Description	Brief description, may be less detailed.	Comprehensive, detailed explanation.
Drawings	Optional.	May include drawings, if necessary.

Differences between Provisional and Complete Specification

Feature	Provisional Specification	Complete Specification
Filing Time	Can be filed as the initial application.	Must be filed within 12 months of filing the provisional specification or may be filed directly at any time (if the applicant does not intend to file a provisional specification).
Priority Date	Filing date of provisional specification.	Filing date of complete specification.
Legal Protection	No legal protection without complete specification. If the complete specification is not filed within 12 months of filing the provisional specification, the patent application is deemed abandoned (u/s 9)	Legal protection begins after examination and grant.

Key Parts of a Patent Specification

A patent specification contains the following parts:

- Title of the Invention
- Field of the Invention
- Background of the Invention
- Objects of the Invention
- Summary of the Invention
- Detailed Description of the Invention
- Claims
- Abstract
- Drawings (if any)

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The first page of Form-2 shall contain:

- **Title** of the invention;
- **Name, address and nationality** of each of the applicants for patent; and
- **Preamble** to the description:

If the provisional specification is filed, the Preamble shall be as under:

“ The following Specification describes the invention”.

If the complete specification is filed, the Preamble shall be as under:

“ The following specification particularly describes the invention and the manner in which it is to be performed.”

Title of the Invention

- **Purpose**: The title is a brief, precise, and descriptive statement which adequately represents the invention being claimed and is normally in not more than **fifteen words** [Rule 13(7)(a)]. The title of an application is generally sufficiently indicative of the subject matter of the invention and discloses the specific features of the invention. It helps in identifying the subject matter and field of the invention.

Title of the Invention

- **Legal Relevance**: The title serves a classification purpose and assists in the search and identification of related patents. It should not be vague or overly broad, as it may affect the patentability of the invention.

Title of the Invention

Examples

1) RAILWAY TRACK MONITORING BOT
2) IOT BASED SUSTAINABLE SOLAR ASSISTED GLASS BOX WATER PURIFICATION DEVICE
3) IOT-BASED SOLAR-POWERED AUTOMATIC STREET LIGHT CONTROL

Vague Titles

- Electronic Device
- Advanced Technology

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Field of the Invention

- **Purpose**: This part outlines the technical domain or industry to which the invention pertains, providing a framework for understanding the invention in a broader technological context. The description preferably begins with a general statement of the invention so as to indicate briefly the subject matter to which the invention relates, e.g. This invention relates to ……. Thereafter, the advantages of the invention may be mentioned to bring out clearly the areas of application and preferable use of the invention.

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Field of the Invention

- **Legal Relevance**: According to Section 2(1)(j) of The Patents Act, the invention must fall within a specific technological area and contribute to the advancement of that field. It also helps to delineate the scope of the invention.

Field of the Invention

Example 1:

The present invention relates to a method that uses sensors and Arduino nano controller to monitor the railway track. Motor driver and 12 V DC motor is used to control the bot through mobile application which is connected to Arduino and RF Tx/Rx.

Example 2:

The present invention relates to the field of water purification technologies, particularly focusing on decentralized and sustainable solutions for providing clean and safe drinking water. This invention operates at the intersection of environmental sustainability, public health, and technological innovation, addressing the pressing need for reliable water purification methods in areas with limited infrastructure.

Background of the Invention

- **Purpose**: This part provides a description of the existing technology (prior art) and "identifies the problem" or deficiency that the invention addresses. This section identifies the prior art documents by their publication numbers, detailing the disclosures of each of these documents and highlighting the drawbacks or issues present in those prior arts. These prior art documents collectively are a part of the general state of the art known to the applicant at the time the invention was made. The background further explains the significance of the invention by discussing how existing solutions fall short and demonstrates the need for further research and development in that field.

Background of the Invention

- **Legal Relevance**: Under Section 2(1)(j), 2(1)(ja) and 2(1)(l) of The Patents Act, the invention must be novel and involve an inventive step. **The background establishes the technical problem and the gap in the prior art that the invention solves, which is critical to demonstrating novelty and inventiveness.**

Background of the Invention

Example 1:

The background of the invention for this patent application involves examining prior solutions and identifying the challenges they face. Historically, access to clean water in areas with limited infrastructure has been a persistent issue. Traditional water purification methods often rely on centralized systems that may not be suitable for remote or off-grid locations. Moreover, these systems can be costly to install and maintain, making them inaccessible to many communities

In areas where water sources are contaminated or scarce, conventional purification methods such as boiling, chemical treatment, or filtration may not be sufficient to ensure safe drinking water. Additionally, reliance on non-renewable energy sources for water treatment can exacerbate environmental challenges and contribute to carbon emissions.

Objects of invention

- **Purpose**: The purpose of this part is to clearly bring out the objectives to be achieved by the invention. It shall clearly mention the technical problems associated with the existing technology (already identified in the background portion) and the solution for that, bringing out the differences between the claimed invention and the prior art.

Objects of invention

The **solution sought by the invention** should be clearly brought out as object(s) of inventions with statements like,

-The principal object of this invention is…….,

-Another object of this invention is ……..,

-A further object of this invention is ……. Etc.

- **Legal Relevance**: This section serves to highlight the main objectives of the invention to be achieved.

Objects of invention

Example :

To monitor the railway tracks in real time continuously to detect crack also to implement high precision sensors that can identify cracks in the structure and other defects like deformation of rail tracks, etc. It further reduces the possibility of derailment due to malfunctioning of tracks and provide improvement in safety through prevention of future track malfunction also ensure any possible malfunction of track, which will lead to derailment, is addressed before accidents or derails occur. To make a predictive analytics-based schedule for maintenance and implement a proactive data driven schedule for maintenance by ensuring the issue, which is addressed on time, before it grows into an unmanageable problem. To maintain the operational safety of railway by conformity with safety regulations and standards. And to analyze the data collated by sensors finding patterns of track degeneration and analyze sensor data over time to understand the degrade. It also analyze sensor data over time to understand the degradation of tracks.

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Summary of the Invention

- **Purpose**: The summary provides an overview of the invention's key aspects and benefits, allowing readers to understand its essence quickly. It is a simplified version of the more detailed disclosure that follows. It specifies the key technical features incorporated in the invention which contribute to its technical advancement.

Summary of the Invention

- **Legal Relevance**: This section serves to briefly highlight the inventive aspects of the patent and helps frame the claims in the detailed description. It should not introduce new matter that isn’t supported by a detailed description or claims.

Summary of the Invention

Example:

The present invention relates to a smart, autonomous railway track monitoring system designed for detecting cracks and obstacles using infrared (IR) sensor technology. This system provides a reliable and energy-efficient method for monitoring the condition of railway tracks in real time, ensuring timely maintenance and safety. The system operates on a low power consumption model and is powered by a lithium-ion battery, which is integrated into the device to provide the necessary energy for its operation. In one embodiment, the lithium-ion battery is connected to a IC 7805 voltage regulator, which stabilizes the voltage output to a consistent 5V. This regulated 5V supply is then fed into an Arduino Nano microcontroller, which acts as the central processing unit for the system. The Arduino Nano processes the input from the IR sensors, which are responsible for detecting any cracks or obstacles on the railway track. The IR sensors continuously monitor the track surface and provide real-time data to the Arduino Nano.

Brief Description of Drawings, if any

- **Purpose**: The **"Brief Description of Drawings"** in a patent specification serves to provide a concise overview of the illustrations or figures included in the patent application and gives a brief explanation of the figures or diagrams. The drawings can illustrate specific aspects of the invention that may be difficult to describe in words alone. The brief description helps to link the textual description with the graphical representation, ensuring that the invention is clearly understood. It serves as a guide for the skilled person so that he can easily understand what each drawing depicts and how it contributes to the overall invention.

Brief Description of Drawings, if any

- **Legal Relevance**: Under **Section 10(4)** of the **Indian Patents Act, 1970**, a patent specification must fully describe the invention in a manner that enables a person skilled in the art to understand it. The "Brief Description of Drawings" helps fulfill this requirement by making it clear how the drawings complement the written description, contributing to a comprehensive disclosure. Since drawings are essential in representing the features of the invention, the brief description reduces the risk of ambiguity in how the figures are interpreted, helping to define the scope of the invention as represented by the figures. The "Brief Description of Drawings" is also

Brief Description of Drawings, if any

Example :

FIGURE-1: Depicts the brief description of the block diagram for the controlling system displaying the major components in the railway monitoring bot such as 1. Lithium-ion battery, 2. IC 7805 Volt regulator, 3. Arduino nano, 4. RF Tx/Rx, 5. Motor driver L293 D, 6. 12V DC motor, 7. Wheel.

FIGURE-2: Depicts the brief description of the block diagram for the monitoring system displaying the major components in the railway monitoring bot such as 1. Lithium-ion battery, 2. IC 7805 Volt regulator, 3. Arduino nano, 4. RF Tx/Rx, 5. Block converter LM2592, 6. Sensors.

FIGURE-3: Depicts the circuit diagram of a lithium-ion battery which has high energy density and ability to withstand harsh environmental conditions, and it is used to power the sensors also have a have a longer lifespan compared to other battery technologies minimizing maintenance requirements and operational costs.

Detailed Description of the Invention

- **Purpose**: This is the most critical part of the patent specification. The detailed description elaborates on the invention's working principles, examples, and possible embodiments, providing all technical details necessary to enable a person skilled in the art to reproduce the invention.

Detailed Description of the Invention

- **Legal Relevance**: Section 10(4) of the Patents Act stipulates that the invention must be described fully and particularly, with enough detail to allow the invention to be performed by someone skilled in the relevant field. The description must support the claims, and any broad claim must be backed by a sufficiently detailed disclosure.

Detailed Description of the Invention

Key Features:

- A description of an invention is required to be furnished in sufficient detail to give a complete picture of the invention and follow the Summary of the invention. The nature of improvements or modifications effected with respect to the prior art should be clearly and sufficiently described. It may include examples/drawings or both for clearly describing and ascertaining the nature of the invention. Examples must be included in the description, especially in the case of chemical-related inventions.
- Disclosure of invention in a complete specification must be such that a person skilled in the art should be able to perform the invention based on what is disclosed in the specification.

Detailed Description of the Invention

- Reference to the drawings should be specific and preferably in the following form: “This invention is illustrated with the help of the accompanying drawings.....”
- The Specification in respect of Patent of Addition should contain at the beginning of the description, a definite statement indicating an improvement in or modification of the original invention and the serial number of the Application for Patent in respect of the original invention. The Specifications should also contain a short statement of the invention as disclosed in the earlier Specification.
- Terms in other languages, if any, used in the description should be accompanied by their English equivalents. The use of vague words, slang and colloquialisms is objectionable and shall be avoided.

Detailed Description of the Invention

- The Act specifically requires that the complete specification must describe the best method of performing the invention known to the applicant, including the one, which he may have acquired during the period of provisional protection prior to the date of filing the complete specification.

Claims

- **Purpose**: The claims define the scope of protection granted by the patent. They describe the inventive aspects that make the invention novel and non-obvious, and they outline the specific features that the applicant seeks to protect. Claims can be independent or dependent.

Claims

- **Legal Relevance**: Under Section 10(4) and 10(5) of the Indian Patents Act, the claims must be clear, concise, and supported by a detailed description. The claims define the extent of the protection, and any ambiguity in the claims may lead to legal challenges or difficulties in enforcement. The claims are examined carefully to ensure they meet the requirements of novelty and inventive step as per Section 2(1)(j) and Section 2(1)(ja), 2(1)(l) of the Act.

Claims

Examples:

1. Bot for detecting obstacles and cracks in train track include DC motor (1), Arduino nano (2), Motor drive L293D (3), Transmitter and receiver (4), IR sensor (5), Human detection sensor (6) characterized in such a way that the integration of obstacle detection technology ensures the bot can autonomously navigate the track, avoiding physical barriers and environmental hazards, while maintaining stable operation.
2. An IoT based sustainable solar-assisted glass box water purification device (1) consisting of: a 5-inch thin square cut glass box (10) with dimensions of 20cm length and width, allowing sunlight exposure and equal interval water supply for storage;a transparent glass box or chamber (20) for water storage and treatment, enabling sunlight penetration for purification; an integrated solar panels (30) for harnessing solar energy to power the purification process, ensuring self-sustainability and suitability for off-grid areas;a plurality of filtration and purification mechanisms (40) within the glass box (20);an IoT sensor and connectivity for real-time monitoring of water quality, temperature, flow rate;a wireless transmission means for transmission of monitoring data to a central server or an user interface, allowing remote monitoring, management, and control of the device.

Abstract

- **Purpose**: The abstract is a brief, concise summary of the invention, usually limited to about 150 words. It is designed to give an at-a-glance overview of the invention for patent search purposes.
- **Legal Relevance**: Although the abstract is not used to define the legal scope of the patent, it must be accurate and reflect the invention's core elements. It plays an essential role in patent databases for indexing and searching.

Abstract

Key Features:

- Every complete specification shall be accompanied by an abstract to provide technical information on the invention. The abstract shall commence with the title of the invention.
- The abstract shall be so drafted that it constitutes an efficient instrument for the purpose of searching in the particular technical field.

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Abstract

- The abstract shall contain a **concise summary** of the matter contained in the specification. The summary shall indicate clearly the technical field to which the invention belongs, technical problem to which the invention relates and the solution to the problem through the invention and principal use or uses of the invention.
- The abstract may not contain more than **150 words**.
- If the specification contains any drawing, the applicant shall indicate reference numerals of drawings in the abstract, which may accompany the abstract when published. Each main feature mentioned in the abstract and illustrated by a drawing shall be followed by the reference sign used in that drawing.

Abstract

Example:

The railway infrastructure has ensured both safe and efficient monitoring but somehow cracks and obstacles in the tracks are huge sources of safety risks, which may lead to derailment and accidents. Thus, it is designed to support the development of an automated system for monitoring railway track machine learning algorithms for obstacle detection and crack detection using advanced sensor technologies. The system is regularly scanning railway tracks for structural defects and foreign objects which may hinder train passage. It scans the tracks through a combination of ultrasonic, infrared sensors mounted on railway vehicles. In real time data collected by sensors, anomalies like cracks, breaks, or obstacles are identified. It uses predictive algorithms to detect potential failures in the tracks before they happen, enables preventative maintenance and thereby reduces downtime. This solution safety improves, reduces manual effort in visual inspection and reduces accident risks, thus contributing to more reliable.

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Drawings (if applicable)

- **Purpose**: Drawings clarify complex aspects of the invention, particularly when the invention involves apparatuses, processes, or systems. They help to illustrate the physical form, structure, or process flow of the invention.
- **Legal Relevance**: According to Rule 15 of the Patents Rules, 2003, drawings must be clear, precise, and referenced appropriately within the specification. While not always required, drawings are crucial for inventions involving mechanical or complex processes, as they provide visual clarity.

Drawings (if applicable)

Key Features:

- Drawings or sketches, which require a special illustration of the invention, shall not appear in the description itself. Such drawings shall be on separate sheet(s).
- Drawings shall be prepared neatly and clearly on a durable paper sheet.
- Drawings shall be on standard A4 size sheets with a **clear margin** of at least 4 cm on the top and left hand and 3 cm at the bottom and right hand of every sheet.

Drawings (if applicable)

- Drawings shall be on a scale sufficiently large to show the inventions clearly and dimensions shall not be marked on the drawings.
- Drawings shall be sequentially or systematically **numbered** and shall bear - i. in the left-hand top corner, the **name of the applicant**; ii. in the right-hand top corner, the **number of the sheets** of drawings, and the consecutive number of each sheet; and iii. In the right-hand bottom corner, the **signature** of the applicant or his agent.
- **No descriptive matter** shall appear on the drawings except in the flow diagrams

Drawings (if applicable)

Example:

The present disclosure provides an optical fiber cable (100). The optical fiber cable (100) includes a central strength member (102). The central strength member (102) lies substantially along a longitudinal axis of the optical fiber cable (100). In addition, the optical fiber cable (100) includes one or more buffer tubes (104a-104l) stranded around the central strength member (102). Moreover, the optical fiber cable (100) includes a first layer (108). The first layer (108) surrounds the one or more buffer tubes. Further, the optical fiber cable (100) includes a second layer (110). The second layer (110) surrounds the first layer (108). Each of the one or more buffer tubes (104a-104l) encloses 24 optical fibers. The first layer (108) has one or more yarns. In addition, the first layer (108) acts as a binding element for the one or more buffer tubes (104a-104l). The optical fiber cable (100) has an outer diameter of 8.8 millimeter and a weight of 85 kilograms per kilometer.

Drawings (if applicable)

The present disclosure provides an optical fiber cable (100). The optical fiber cable (100) includes a central strength member (102). The central strength member (102) lies substantially along a longitudinal axis of the optical fiber cable (100). In addition, the optical fiber cable (100) includes one or more buffer tubes (104a-104l) stranded around the central strength member (102). Moreover, the optical fiber cable (100) includes a first layer (108). The first layer (108) surrounds the one or more buffer tubes. Further, the optical fiber cable (100) includes a second layer (110). The second layer (110) surrounds the first layer (108). Each of the one or more buffer tubes (104a-104l) encloses 24 optical fibers. The first layer (108) has one or more yarns. In addition, the first layer (108) acts as a binding element for the one or more buffer tubes (104a-104l). The optical fiber cable (100) has an outer diameter of 8.8 millimeter and a weight of 85 kilograms per kilometer.

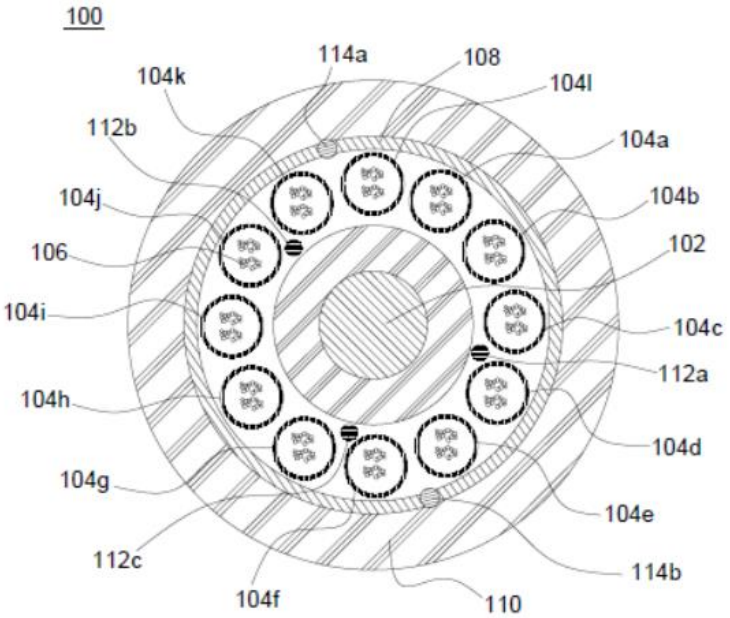

FIG. 1A

Certain points regarding content of specification

(ii) if the applicant mentions a biological material in the specification which may not be described in such a way as to satisfy clauses (a) and (b), and if such material is not available to the public, the application shall be completed by depositing the material to an international depository authority under the Budapest Treaty and by fulfilling the following conditions, namely:—

(A) the deposit of the material shall be made not later than the date of filing the patent application in India and a reference thereof shall be made in the specification within the prescribed period;

(B) all the available characteristics of the material required for it to be correctly identified or indicated are included in the specification including the name, address of the depository institution and the date and number of the deposit of the material at the institution;

(C) access to the material is available in the depository institution only after the date of the application of patent in India or if a priority is claimed after the date of the priority;

(D) disclose the source and geographical origin of the biological material in the specification, when used in an invention.

(4A) In case of an international application designating India, the title, description, drawings, abstract and claims filed with the application shall be taken as the complete specification for the purposes of this Act.

(5) The claim or claims of a complete specification shall relate to a single invention, or to a group of inventions linked so as to form a single inventive concept, shall be clear and succinct and shall be fairly based on the matter disclosed in the specification.

(6) A declaration as to the inventorship of the invention shall, in such cases as may be prescribed, be furnished in the prescribed form with the complete specification or within such period as may be prescribed after the filing of that specification.

(7) Subject to the foregoing provisions of this section, a complete specification filed after a provisional specification may include claims in respect of developments of, or additions to, the invention which was described in the provisional specification, being developments or additions in respect of which the applicant would be entitled under the provisions of section 6 to make a separate application for a patent.

Interlink Between the Different Parts of a Patent Specification

- **Title, Field, and Background**: These parts set the stage for understanding the invention's context. The title and field define the general scope, while the background establishes the technical problem that the invention addresses. The background highlights why the invention is novel and inventive and how it overcomes limitations in the prior art, supporting the claims of novelty and inventiveness.

Interlink Between the Different Parts of a Patent Specification

- **Summary and Detailed Description**: The summary provides an overview of the invention, while the detailed description expands on the summary with specific examples and technical details. The claims are derived from the detailed description, and each claim should be fully supported by the disclosures in this section.

Interlink Between the Different Parts of a Patent Specification

a. **Detailed Description and Claims**: The detailed description forms the foundation for the claims. The claims are read in consonance with the description to interpret their meaning. Often, the meaning of technical features used in the claims is derived from the description.

For example, if claims pertain to a smartwatch to monitor the heart rate comprising of an optical sensor, the details about the optical sensor's functionality, its placement in the watch and its components can only be fully understood from the description. Further, the claims must be fully supported by a detailed description and cannot extend beyond what is disclosed therein. The enablement requirement in Section 10(4) means that a person skilled in the art should be able to practice the invention based on the detailed description and claims.

Interlink Between the Different Parts of a Patent Specification

a. **Drawings and Detailed Description**: The drawings clarify complex concepts described in the detailed description. Each figure or diagram should be referenced in the detailed description, providing a visual representation that supports the textual disclosure.

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Thank you!

Do you have any questions?

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