

Patent: necessity, challenges and the innovations Dilemma.

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Abstract— The patent system is based on a social bargain: a 20-year monopoly for inventors in exchange for public disclosure to promote R&D. This review analyzes the necessity of patents and the key challenges limiting their impact. Patents are essential for incentivizing high-cost R&D, enabling technology transfer, ensuring knowledge disclosure, and driving economic growth. However, significant difficulties persist: lengthy examination of 2 to 5 years, high costs over \$50,000 for global PCT filing, risks in claim drafting, issues of evergreening and patent trolls, and expensive litigation. Global variations under TRIPS, India's Section 3(d), and differing practices in the US, EU, and China further complicate the system. The review concludes that while patents reward innovation, cost and complexity exclude small inventors. Reforms need faster examination, lower costs, and better balance between inventor rights and public access.

(keywords): Patents, Innovation Dilemma, R&D, Patent Challenges, TRIPS

I. INTRODUCTION

Patents grant inventors exclusive rights to their creations, preventing others from making, using, or selling the invention without permission. It is a Legal right granted by the government for 20 years in exchange for public disclosure of inventions.

II. THE SCOPE OF A PATENT

The scope of a patent defines the precise boundaries of the legal protection granted to an invention. These limits are determined by the patent's claims, which are the numbered sentences at the end of the patent specifying what the inventor has a right to exclude others from making, using, or selling.

• Example 1: A Novel Bicycle Design

Imagine a company patents a new bicycle with claims specifying "a frame made of bamboo, a belt-drive system instead of a chain, and integrated LED lights powered by wheel rotation." The *scope of this patent* would cover any bicycle that incorporates all three of these specific features. If a competitor later designs a bicycle with a bamboo frame and a belt-drive system but uses traditional battery-powered lights, it would likely fall outside the patent's scope because it lacks the "integrated LED lights powered by wheel rotation." This shows how each element in the claims contributes to defining the protected invention.

• Example 2: A Unique Food Preservation Method

Consider a patent for a food preservation method that claims "submerging produce in a solution of specific organic acids (Acid A and Acid B) at a temperature between 35-40°F for precisely 15 minutes, followed by vacuum sealing." The *scope of this patent* protects this exact sequence of steps and conditions. If another company develops a preservation method that uses Acid A and Acid B, but at a temperature of 50°F or for a duration of 20 minutes, their method would likely fall outside the patent's scope because it does not meet the specific temperature or time parameters defined in the claims. The precise details in the claims are crucial for determining what is protected.

III.NEED OF PTETENTS

Patents are foundational for translating early-stage innovation into commercial success. They offer the necessary legal exclusivity and financial security that organizations require to justify massive, high-risk R&D expenditures.

The fundamental drivers and benefits of the patent system include:

- **Incentive for R&D Investments:** Conducting research requires significant capital and long gestation periods (especially in pharmaceuticals, biotech, and semiconductors). Without the temporary exclusivity to recoup these costs, firms would not invest [6].
- **Knowledge Disclosure:** Patent databases become open to the public after an early publication period (typically 18 months). This stops companies from hiding technology as trade secrets forever and builds a foundation of shared global knowledge.[7].
- **Technology Transfer & Commercialization :** Patents convert abstract ideas into legally recognized, tradable property. They can be sold or licensed to third parties and are a primary catalyst for attracting venture capital and investors. [8]

- **Economic Growth:** By safeguarding intellectual property, patents foster healthy competition, create specialized job opportunities, and drive Foreign Direct Investment (FDI) into high-tech sectors.

Types of patents

There are three types of patents: utility, design and plant. Utility and plant patent applications can be provisional and nonprovisional. Provisional applications may not be filed for design inventions.

Utility patents

These may be granted to anyone who invents or discovers a new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvements of these

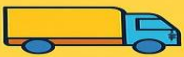
Design patents

Patent laws provide for the granting of design patents to anyone who has invented a new, original ornamental design for an article of manufacture. The ornamental characteristics must be embodied in or applied to such an article. The subject matter may relate to the configuration or shape of an article, surface ornamentation applied to it, or the combination of both. A surface ornamentation design is inseparable from the article to which it is applied and cannot exist alone. It must be a definite pattern applied to an article of manufacture.

The design patent protects only the appearance of an article, not its functional features. The proceedings relating to the granting of design patents are similar to those for other patents, with a few differences. See the current fee schedule for the appropriate filing, search, and examination fees.

Plant patents

The law also provides for the granting of a patent to anyone inventing or discovering and asexually reproducing any distinct and new variety of plant. This includes cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber-propagated plant or a plant found in an uncultivated state.

Comparison of Patent Types			
Use	Utility Patent	Design Patent	Plant Patent
	Functional inventions 	Ornamental designs 	New plant varieties 
Cost	Moderate to high	Lower	Moderate
Duration	20 years	10 years	20 years
Example	Fleet tracking system 	Drink bottle shape 	Hybrid rice variety 

Difficulties in Patents

1. Legal & Procedural

- **Timeline:** The examination process typically spans (2 to 5) years, depending on the jurisdiction and backlog.
- **Procedures:** Requires extensive prior art searching, precise claim drafting, navigating office actions, and potential appeals to overcome rejections. [9,10]

2. Financial

- **High Barrier to Entry:** Securing global protection under the patent Cooperation Treaty (PCT) can exceed (\$50,000) USD in total fees.
- **Categories:** Costs comprise attorney drafting time, filing fees, and annual maintenance/renewal fees.
- **Hardship:** These prohibitive costs frequently price out universities and startups, unless they leverage subsidized filing pathway

3. Technical

- **Claim Strategy:** Balancing broad claims (which offer better protection but risk invalidation) with narrow claims (which are easier to secure but easier to design around).
- **Drafting Risks:** Poorly drafted specifications can lead to early invalidation, rendering the patent useless in subsequent disputes. [11]

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4. Ethical & Policy Concerns

- **Ever greening:** Pharmaceutical companies strategically modifying minor aspects of drugs to extend monopolies.
- **Patent Trolls:** Patent Assertion Entities (PAEs) acquiring rights solely to extort settlements from operating companies.
- **Biopiracy & Access:** Unfair appropriation of traditional knowledge, paired with global access barriers to essential life-saving medicines in low-income regions

5. Enforcement

- **Detection & Cost:** Infringement is technically difficult and expensive to detect.
- **Litigation:** IP litigation is notoriously slow and can range from hundreds of thousands to millions of dollars in legal fees, draining vital capital from innovative businesses [12]

Global Perspective

- TRIPS Agreement: Sets minimum standards, but countries differ in implementation
- .India specific: Section 3(d) prevents evergreening. Patent office backlog was a major issue till 2016-18 reforms.
- US vs EU vs China: Different timelines, examination strictness, and litigation culture.

Conclusion

Patents are needed to reward innovation, but the system creates barriers for small inventors. Future improvements: faster examination, lower costs, better quality control, and balanced access policy

References

1. International Journal of Law www.lawjournals.org ISSN: 2455-219
Volume 12, Issue 1, 2026, Page No. 90-95 The impact on patent law on innovation and technological advancements Dr. Karan Singh Gaur¹, Janvi Chugh² ¹Associate Professor, Anangpuria Law School, Faridabad, Haryana, Indian Research Scholar, Anangpuria Law School, Faridabad, Haryana, India.
2. Unlocking the Potential of Abandoned and Expired Patents: A Strategic Guide to Competitive Advantage
By [DrugPatentWatch](#) / February 12, 2026
3. Bennett Journal of Legal Studies [Vol. 6.1] Bennett Journal of Legal Studies Vol. 06(01), Apr 2025, pp. 122 - 144 PATENTS AND THE PRICE OF NEGLECT Darsana Suresh* & Dr. Kavitha Chalakkal
4. Oliver Gassmann, Martin A Bader, Mark James Thompson. Patent Management: Protecting Intellectual Property and Innovation (Springer Cham), 2021.
5. John Golden, F Kieff, Pauline Newman, Henry Smith. Principles of Patent Law: Cases and Materials (8th Edition Foundation Press, New York), 2024.
6. https://www.wipo.int/en/web/ipday/2017/innovation_and_intellectual_property
7. <https://www.fillun.com/why-patent>
8. <https://www.sciencedirect.com/science/article/pii/S0166497212000314>
9. <https://www.lexology.com/library/detail.aspx?g=ab07fe13-2d86-41c6-b173-6b42d227d5a0>
10. <https://www.policybazaar.com/corporate-insurance/articles/how-to-file-a-patent-in-india-step-by-step-guide/>
11. <https://henry.law/blog/own-higher-quality-patents/>
12. <https://iciset.in/Paper2636.pdf>
13. <https://www.wipo.int/pct/en/index.html>