

P3 Project Report

Design of Executive Desk Accessories using  
Bamboo

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**IDC** School of Design  
अभिकल्प विद्यालय

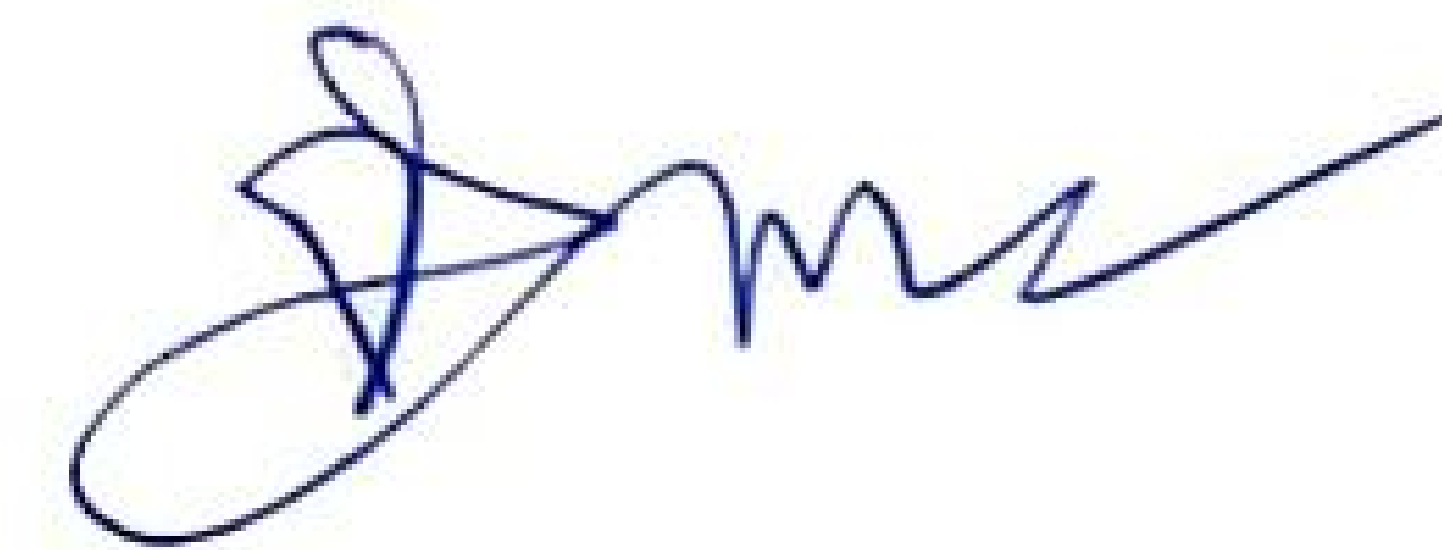


**IIT Bombay**

## Approval Form

*This is to certify that the Industrial Design Project entitled “Design of Executive Desk Accessories using Bamboo” by Priyadarshi Satyam is approved for partial fulfillment for the Master of Design degree in Industrial Design.*

*Prof. Sandesh R  
[Project Guide]*



*Signature of the  
Chair Person*



*Signature of the  
Internal Examiner*




*Signature of the  
External Examiner*





# Declaration Form

*I, declare that this written report represents my ideas in my own words, and where others' ideas or words have been included I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not falsified, misinterpreted or fabricated any idea, data, facts or source in my submission. I understand that any violation of the above will be caused for disciplinary action by the Institute and can also evoke penal action from the source, from which proper permission has not been taken or improperly been cited.*

Signature:   
Name of the Student: Priyadarshi Satyam  
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## Acknowledgement

*I would like to express my heartfelt gratitude to my guide, Prof. Sandesh R , for his essential assistance throughout the project. Special thanks to the professors of Industrial Design Department for their critics and guidance . I am grateful to Rudrapal sir for constantly helping me with all the workshop work in order to finish the final prototype. I am also grateful to all of the instructors, staff, and students at the Industrial Design Centre (IDC) for their assistance, advice, and suggestions. Finally I'd like to express my gratitude to my family and friends for their unwavering support.*

## Abstract

*The project originated from a commitment to sustainability, seeking to mitigate the environmental impact of traditional office materials. Bamboo, renowned for its eco-friendliness and abundance, emerged as the ideal material. Considering factors like availability and expertise, bamboo was chosen for its suitability in crafting premium desk accessories. The project aims to address the prevalent use of non-eco-friendly materials in executive office settings by introducing bamboo-based alternatives. Recognizing the importance of sustainability in professional environments, the design endeavors to imbue executive desk accessories with an aura of prestige and power while remaining environmentally responsible. By leveraging bamboo's unique properties, the project seeks to redefine the notion of luxury office essentials, catering to discerning executives who prioritize sustainability and style. Through meticulous research, prototyping, and user feedback, the project culminates in a collection of iconic bamboo desk accessories, symbolizing both success and environmental stewardship in executive offices.*



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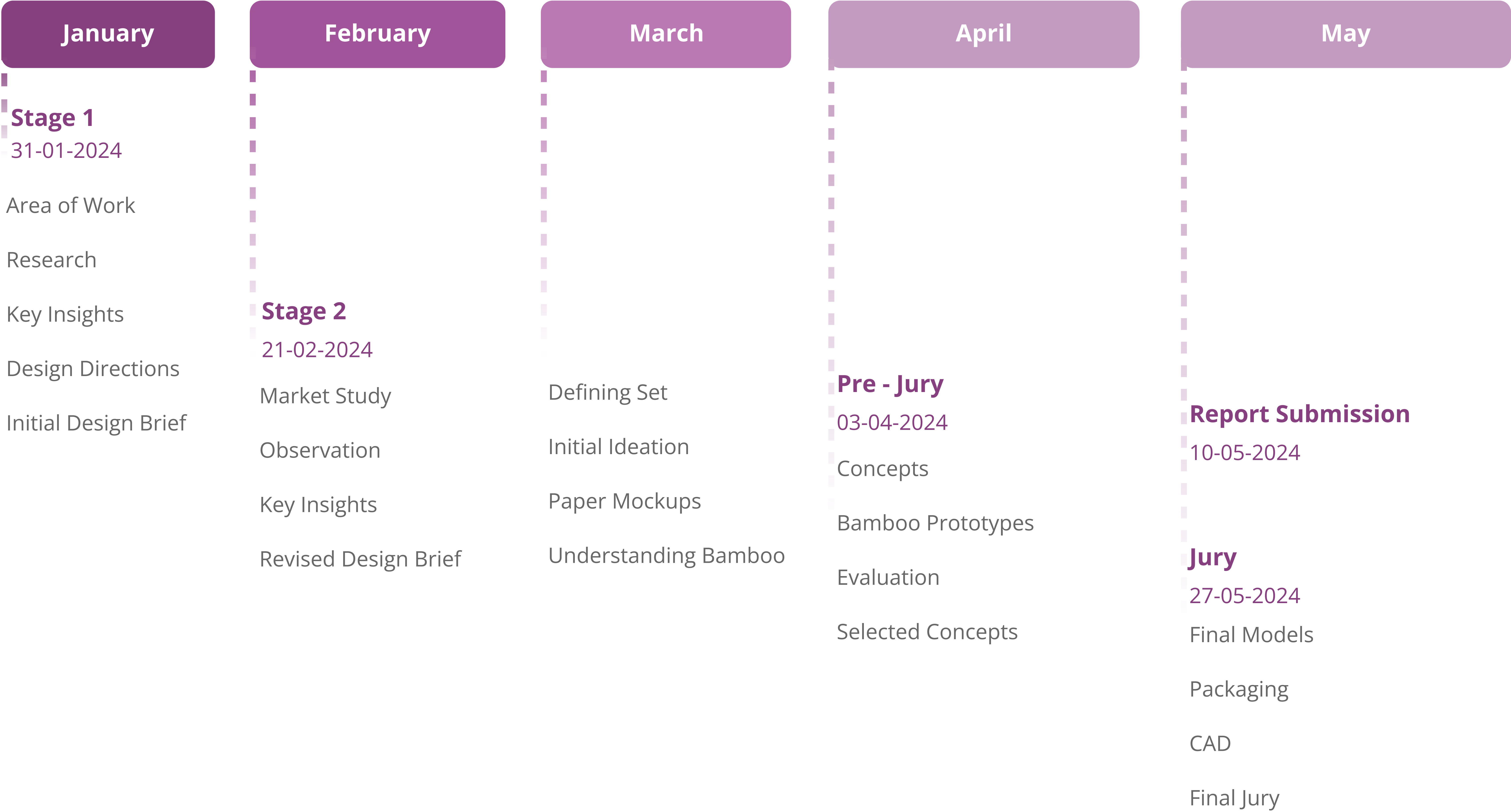
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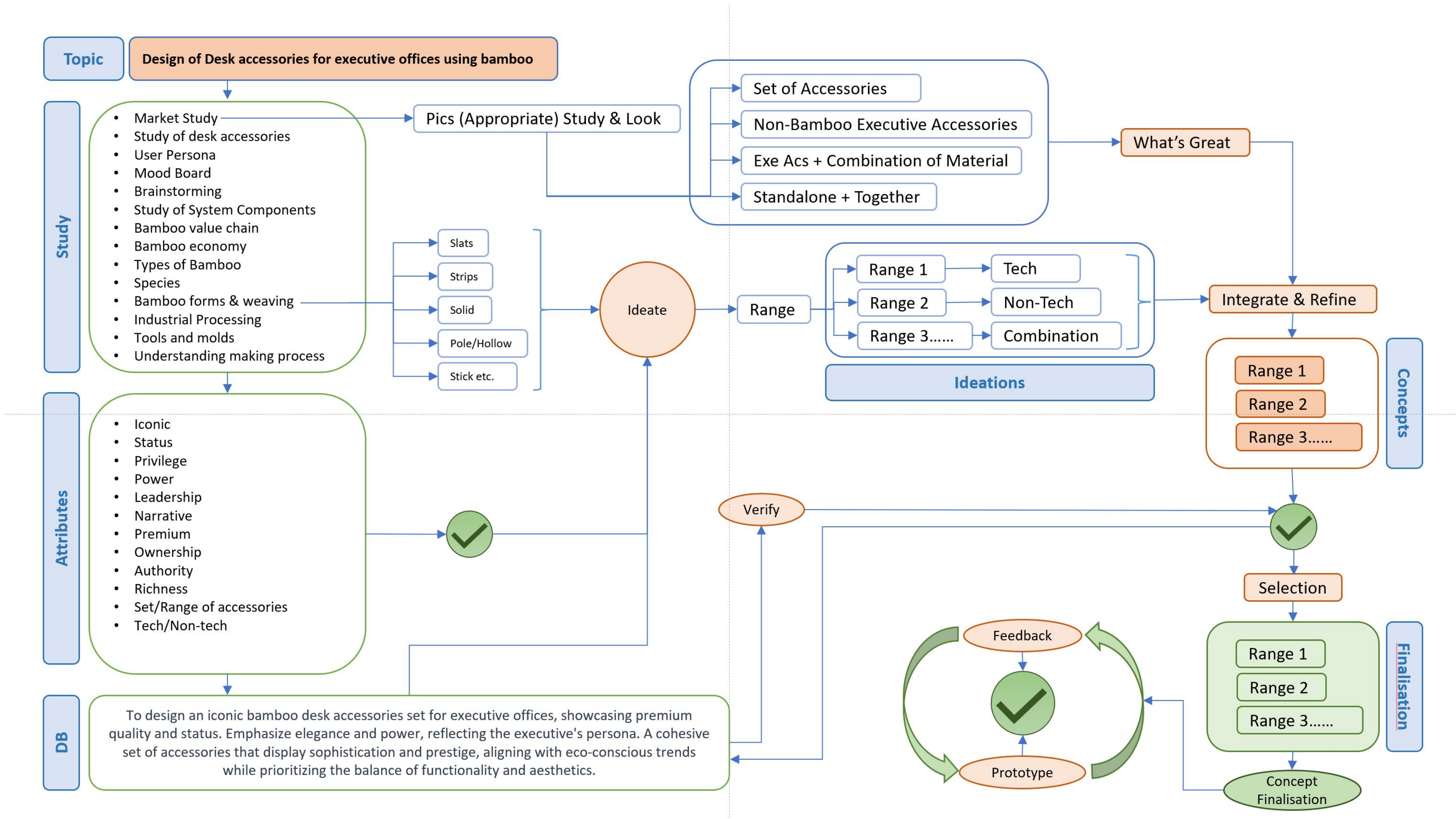
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# 1. Project Timeline





## 2. Methodology & Framework





### 3. Introduction

Executive desk accessories play a pivotal role in enhancing the functionality and aesthetic appeal of professional workspaces. They serve as essential tools for organization, productivity, and personal expression in executive offices worldwide. However, the conventional materials used in manufacturing these accessories often contribute to environmental degradation and fail to align with contemporary sustainability goals. In response to this challenge, this project endeavors to revolutionize the executive office landscape by introducing a line of desk accessories crafted from bamboo—a sustainable and eco-friendly material renowned for its versatility and durability.

Executive office spaces are destined to accommodate authoritative positions that are used to approve, decide, and manage the actions of the organization or company.



## 4. Literature Study of Bamboo & System Components

Bamboos are a diverse group of evergreen perennial flowering plants, characterized by their tall, woody stems and widespread presence in tropical and sub-tropical regions of East and Southeast Asia. With over 1,500 documented species, bamboos exhibit remarkable adaptability to various climates and soil conditions, making them an essential component of ecosystems across these regions.



*Fig. 1. Bamboo*

### 4.1. Why Bamboo?

Bamboo stands as a versatile and sustainable material choice for executive desk accessories, boasting a myriad of advantageous properties. From its rapid growth to remarkable strength and eco-friendliness, bamboo offers a compelling solution for crafting premium-quality office essentials.




Largest and tallest grass of the planet.



Sustainable material




Faster Growth



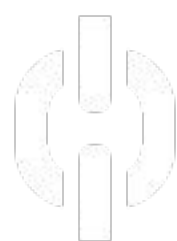
Durable



Cultural Influence



Economic in terms of material cost





4.2. Geographical Study

Bamboo is most commonly grown in Asia, Australia, North America, South America, and Africa. The region where most bamboo is grown worldwide for commercial purposes is in Southeast Asia, especially in China.

More than 50% of the bamboo species occur in Eastern India- Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and West Bengal. Other areas rich in bamboo are the A&N Islands, Chhattisgarh, Madhya Pradesh and the Western Ghats



Fig. 2. Global habitat of Bamboo

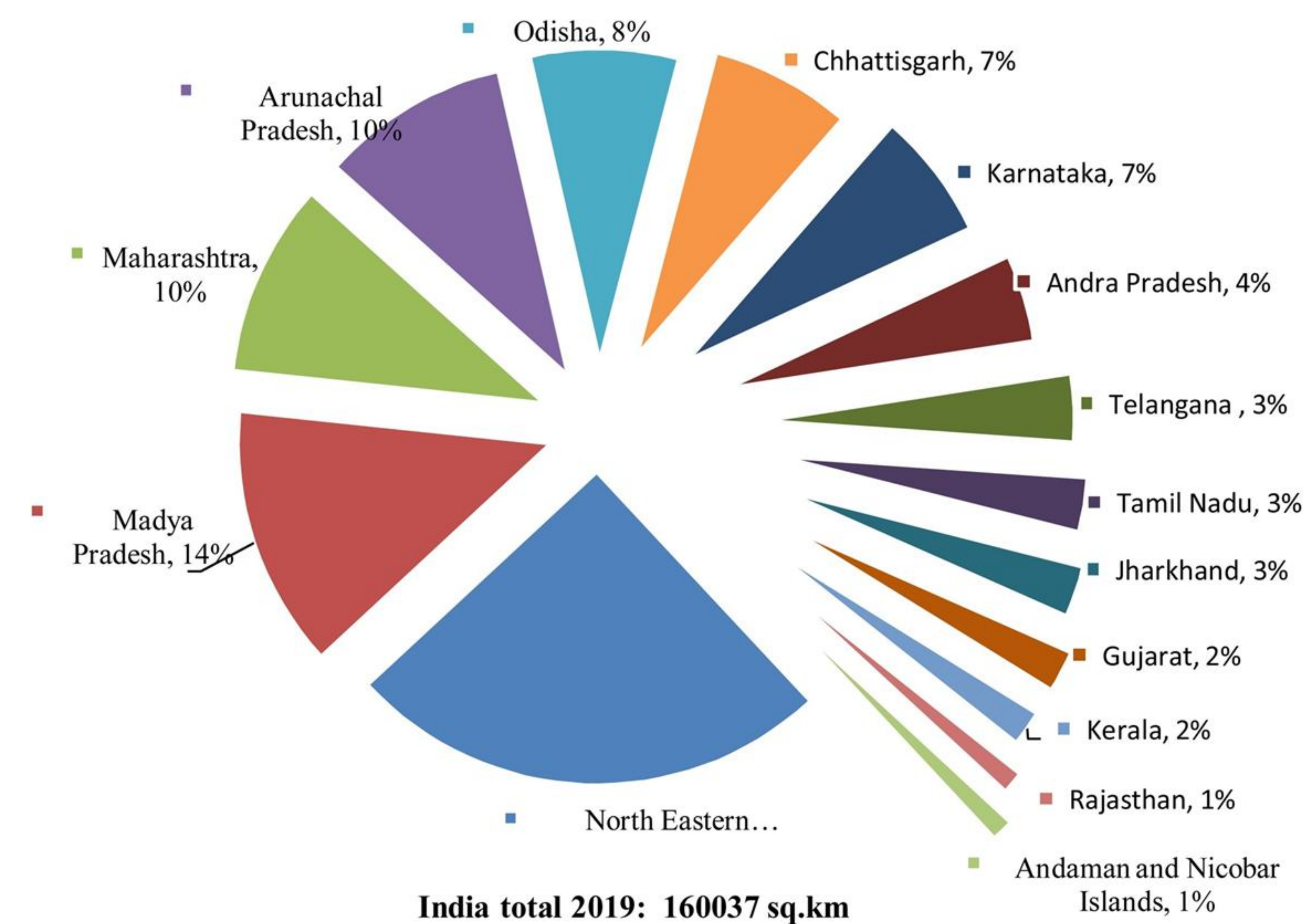


Fig. 3. Indian habitat of Bamboo



### 4.3. North-East India and Bamboo

Bamboo holds immense significance for the people of North East India.



Fig. 4. North-East India Map

#### 1. Assam

Assam is rich in bamboo resources. There are 51 species of bamboo grown. Bamboo is an Integral part of their lifestyle and economy. The most attractive product of them is the Bamboo/Leaf Head-gear-Japi or Chhata which is used as conventional umbrella during rainy season.



Fig. 5. Assam Bamboo Products

#### 2. Arunachal Pradesh

61% forest area is covered with bamboo plantation. There are 26 major tribes and 10 subtribes. Arunachal Pradesh has highly diverse craft in terms of style, pattern, ornamentation of the products. They have Artistic masterpieces



Fig. 6. Arunachal Bamboo Products



3. Meghalaya

This region receives abundant rainfall and is renowned for its signature product, the "Kurup" umbrella, skillfully crafted by the Khasi tribe. Locally known as "meghum khoks," the intricately woven bamboo baskets are used for storing everyday essentials, with men typically taking up the task of weaving in households.



Fig. 7. Meghalaya Bamboo Products

4. Manipur

The traditional bamboo craftsmanship is deeply rooted in their way of life. Manipuri artisans showcase distinctive weaving techniques, evident in a diverse range of basketry. Additionally, they demonstrate mastery in fashioning bamboo into wind musical instruments.



Fig. 8. Manipur Bamboo Products

5. Nagaland

The industrious Naga community excels in crafting an array of bamboo items, ranging from cots to coffins. They take great pride in showcasing their renowned bamboo baskets, while also skillfully producing furniture and contributing to architectural structures using bamboo.



Fig. 9. Manipur Bamboo Products



## 6. Mizoram

Mizoram stands as India's leading bamboo producer. Women are actively involved in weaving, while men focus on bamboo craftsmanship. The widely favored product is the versatile basket, utilized for storing grains and various items, including ornaments. Artistic bamboo carving is a notable skill, with women adorning head ornaments crafted from bamboo and embellished with feathers.



*Fig. 10. Mizoram Bamboo Products*

## 7. Tripura

Their distinctive weaving designs, patterns, and styles set them apart from other states. Bamboo matting reigns as the top product in this region. Furthermore, they engage in innovative sculpture carving experiments using bamboo roots.



*Fig. 11. Tripura Bamboo Products*

## 8. Sikkim

Sikkim holds the distinction of being India's inaugural organic state committed to organic farming. Although bamboo growth isn't ubiquitous across the region, it flourishes abundantly in certain areas. Noteworthy products, such as beer mugs, piras, mugs, and tumblers, catch the eye with their impressive craftsmanship. Bamboo crafting is predominantly undertaken by men in Sikkim.



*Fig. 12. Sikkim Bamboo Products*



### 4.4. The Bamboo Economy

World bamboo production is significant, with China leading the pack, accounting for approximately 67% of global production. Other major producers include India, which contributes around 20%, followed by countries like Vietnam, Indonesia, and Myanmar, each with smaller but notable percentages. Overall, bamboo production is a crucial industry, particularly in Asia, where it serves various purposes ranging from construction material to household products and crafts.

Bamboo finds diverse applications globally, with furniture being one of the primary uses, accounting for a significant share of around 30-40%. Industrial products, including flooring, panels, and paper, also make up a substantial portion, approximately 20-30%. Shoots, valued as a food source, represent another significant share, roughly 5-10%. Bamboo serves as a crucial raw material in construction and handicrafts, making up around 10-20% of its global application. Other uses include its utilization in textiles, medicinal products, and as a renewable energy source. Overall, bamboo's versatility contributes to its widespread adoption across various industries worldwide.

[Link - World Bamboo Production](#)

[Link - Share By Application](#)

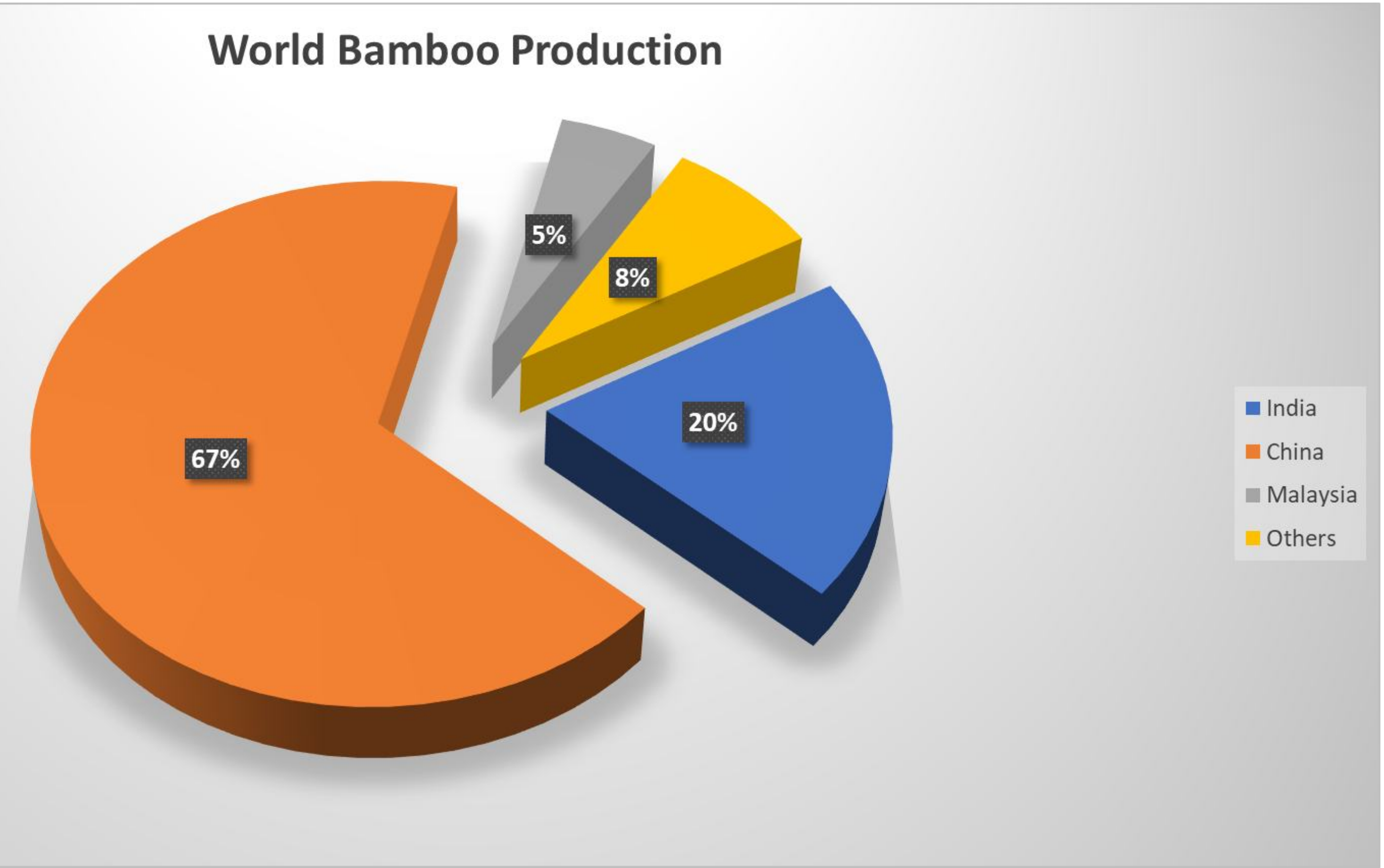


Fig. 13. World Bamboo Production Pie Chart

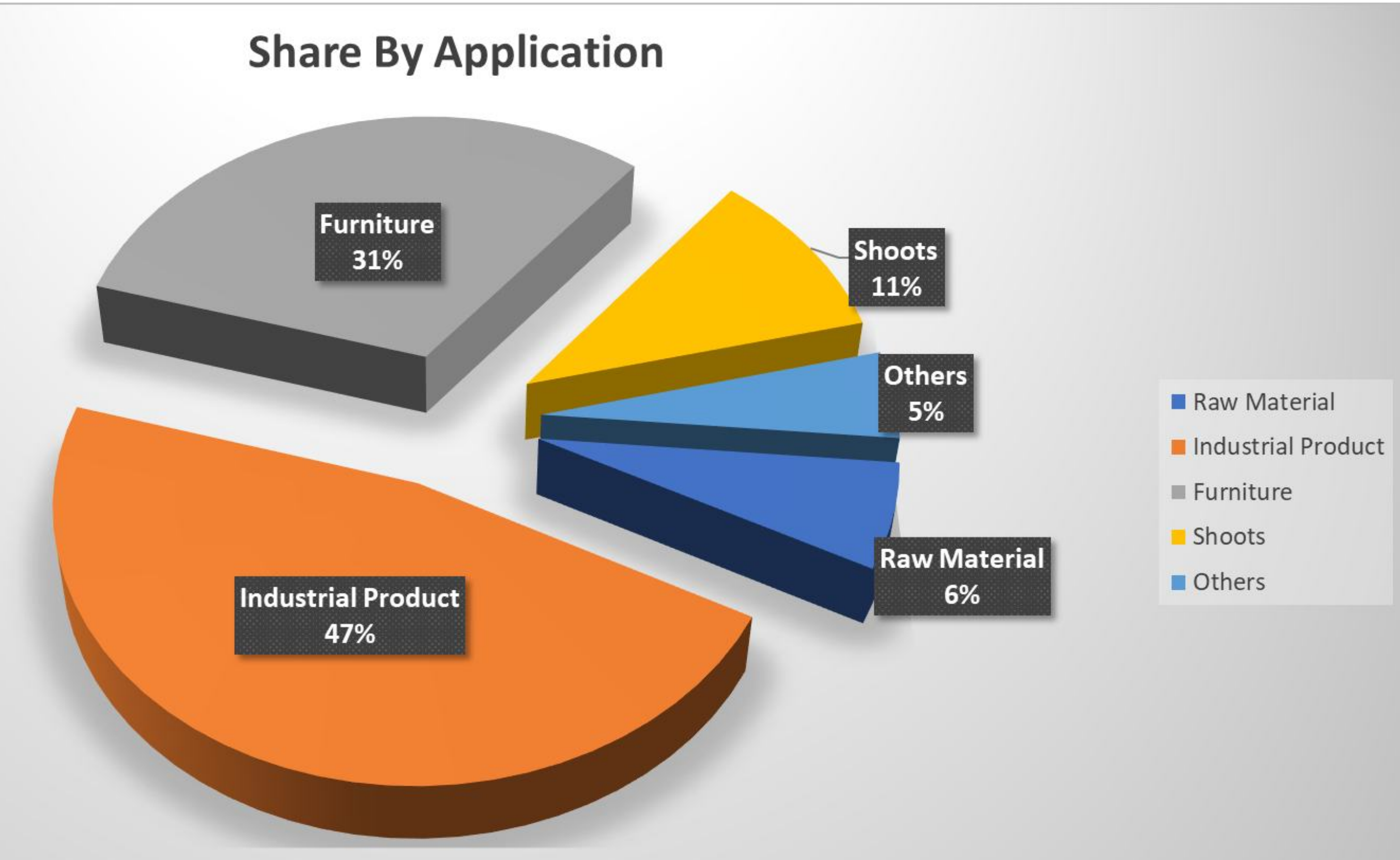


Fig. 14. World Bamboo share by application



The global bamboo market is driven by key players such as MOSO International BV, Shanghai Tenbro Bamboo Textile Co., Ltd., Dasso Industrial Group Co., Ltd., and Teragren LLC. The market size is estimated to be around USD 68-80 billion.

In Europe, the market is growing steadily, driven by increasing environmental consciousness and a rising demand for sustainable products. Key players are expanding their presence in the region to cater to this demand.

North America is experiencing a surge in bamboo adoption due to its eco-friendly properties and versatility. Major players are focusing on innovation and product diversification to capture a larger market share.

Asia Pacific dominates the global bamboo market, accounting for the largest share. Countries like China, India, and Vietnam are key producers and consumers of bamboo products. The region benefits from abundant bamboo resources and a long tradition of bamboo utilization. Major players are actively involved in research and development to enhance product quality and expand their market reach within the Asia Pacific region and beyond.

[Link- Global Bamboo Market Share](#)



Fig. 15. Global Bamboo Market



### 4.5. The Bamboo Value Chain

The bamboo value chain revolves around artisans, with various interconnected elements contributing to the production and distribution process. Bamboo farmers cultivate and harvest bamboo, supplying raw materials for artisans. Collectors gather bamboo from natural sources, ensuring a steady supply for production. Wholesalers procure bamboo products from artisans and distribute them to retailers, who sell to consumers. Exporters play a crucial role in transporting bamboo products to international markets, expanding their reach. Throughout this value chain, artisans transform raw bamboo into a wide range of products through skilled craftsmanship. These products are then made available to consumers, who appreciate bamboo's versatility, eco-friendliness, and unique aesthetic.

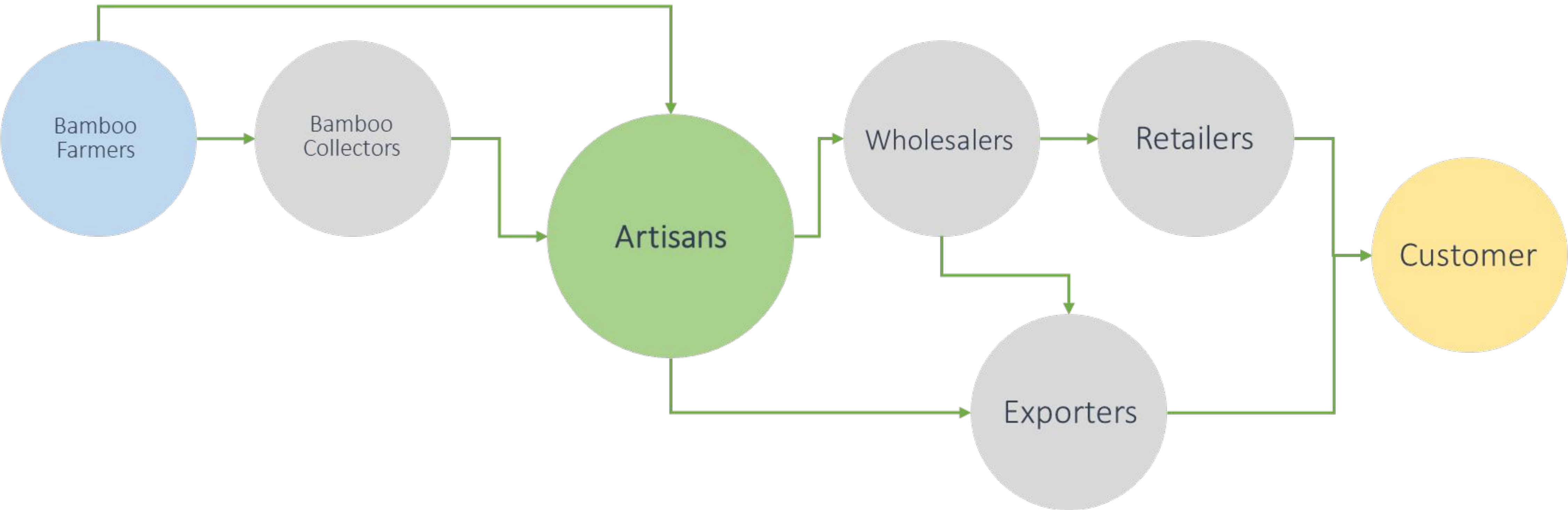


Fig. 16. Bamboo Value Chain Diagram (Artisans)

The bamboo value chain in the industry sector comprises several key components that contribute to the processing and distribution of bamboo products.

Bamboo farmers cultivate and harvest bamboo, providing the raw material for the industry. Collectors gather bamboo from natural sources, ensuring a consistent supply.

Traders act as intermediaries, facilitating the movement of bamboo from farmers and collectors to processing workshops. Factories play a pivotal role in processing raw bamboo into various products, such as furniture, flooring, and handicrafts.

Exporters handle the transportation and distribution of finished bamboo products to international markets, while final buyers purchase these products for various purposes.

Preprocessing workshops may handle tasks such as cleaning, sorting, and initial treatment of bamboo before it enters the processing phase. Processing workshops then undertake further refinement and production to create market-ready goods. Throughout this value chain, each component plays a vital role in ensuring the efficient processing and distribution of bamboo products to meet consumer demand.

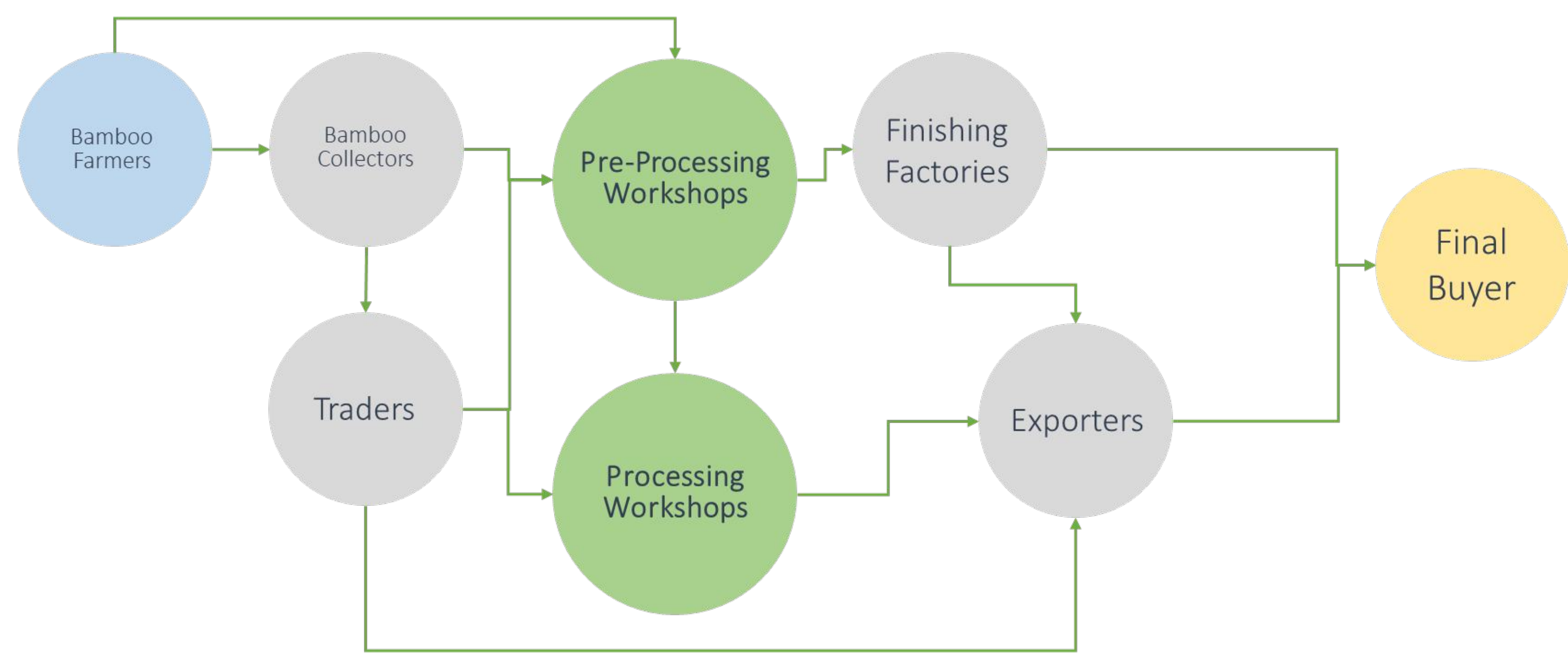


Fig. 16. Bamboo Value Chain Diagram (Industry)



Value addition in the bamboo supply chain involves each player enhancing the bamboo product in some way, from cultivation to retail. As the product moves from cultivator to collector to local trader to big trader to wholesaler and finally to the retailer, each stage adds value through processing, refinement, or distribution. This incremental value addition increases the overall profit margin at each stage of the supply chain, allowing each player to earn a profit while contributing to the final market value of the bamboo product.

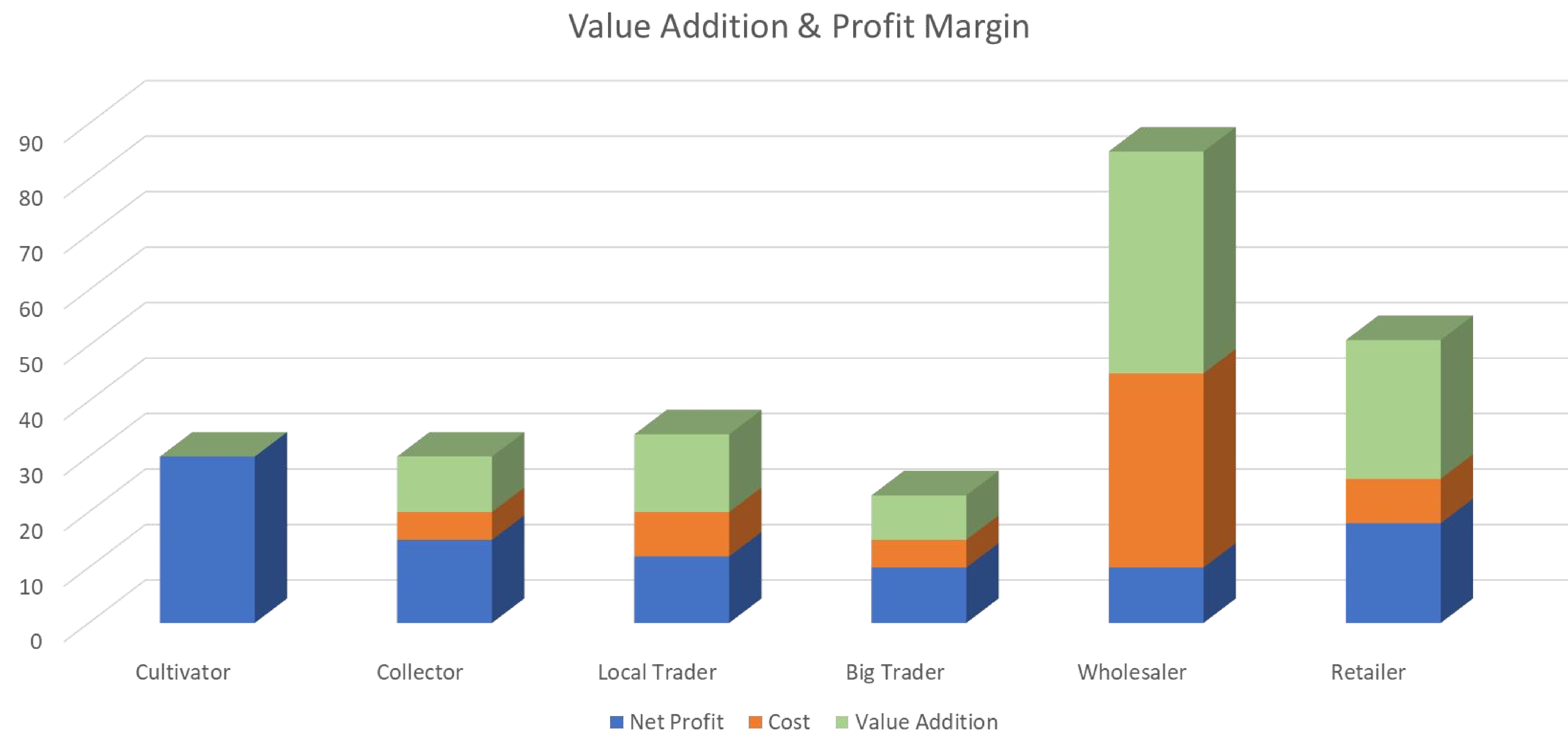


Fig. 17. Value addition and profit margin graph



## 4.6. Species of Bamboo

### 1. Bambusa Tulda

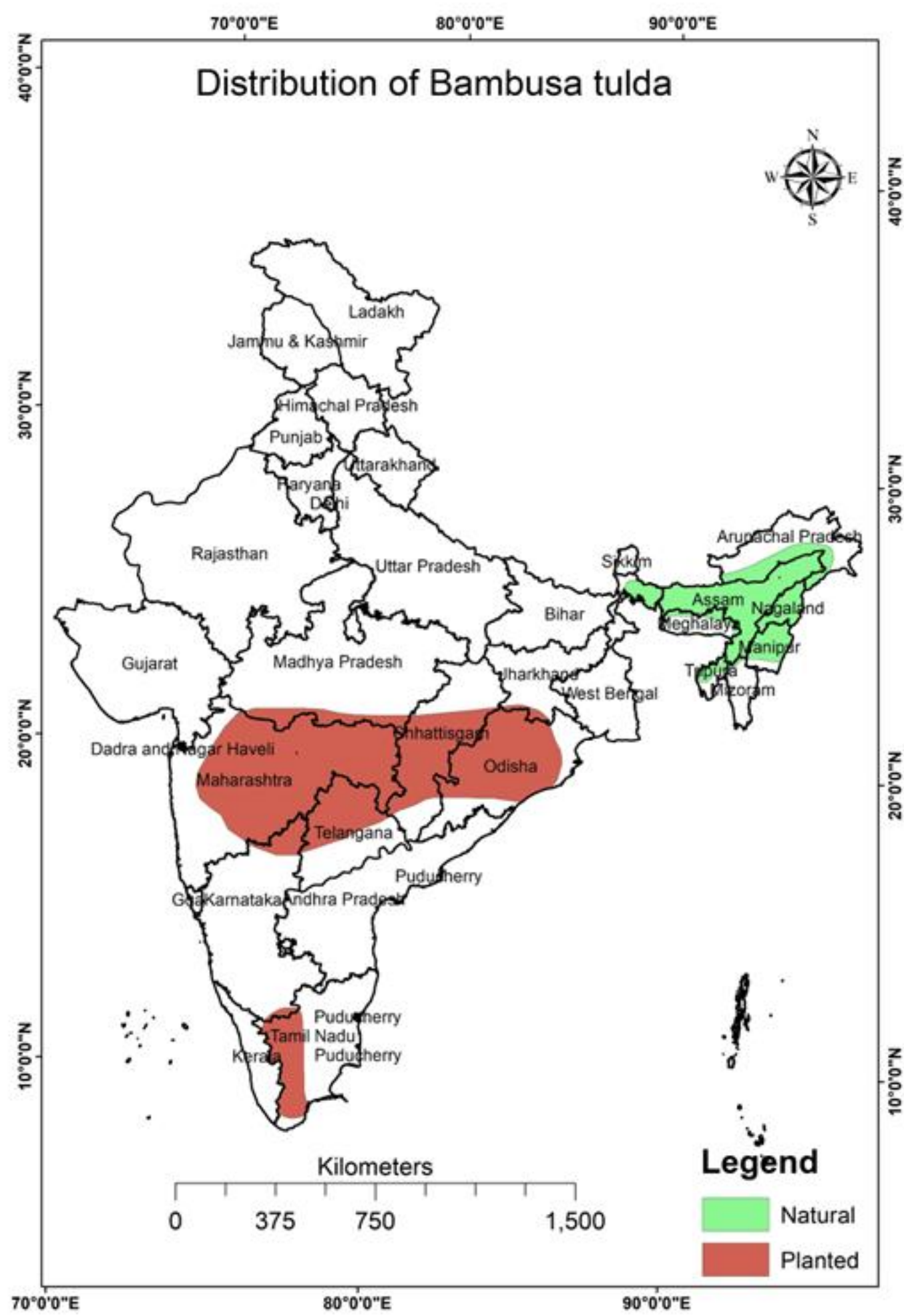


Fig. 17. Bambusa Tulda

**Local names:** Jati Bahn (Assam), mritinga (Tripura), spineless Indian bamboo.

**Uses:** A wonder Indian species of choice for the whole range of products especially agarbatti sticks, lumbar, paper, handicrafts, edible shoots, etc

[Link- Bamboo Species](#)

### 2. Bambusa Bambos

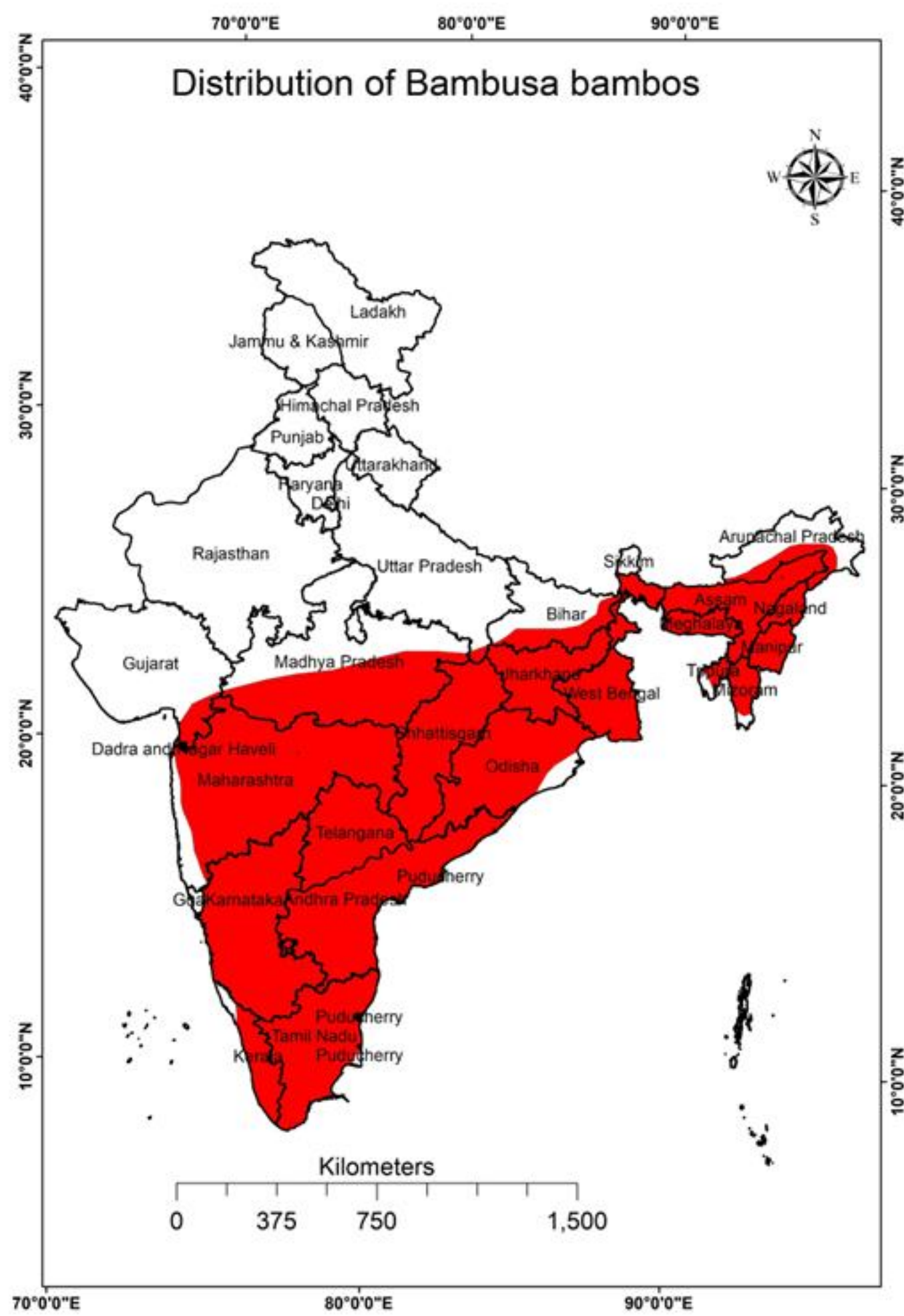


Fig. 18. Bambusa Bambos

**Local names:** Kotoha (Assam); Behor bans (West Bengal); Mula (Malayalam); Kanta bans (Orissa); Nal bans (Punjab); Saneibo (Manipur); Mungil (Tamil Nadu); Mulla veduru (Andhra Pradesh)

**Uses:** Construction, scaffolding, ladders, Furniture, Paper/pulp, edible shoots, leaf as fodder

**Soil type-** Acidic soils, sandy loams and alluvial soils.

**Climatic conditions-** Tropical and tropical to sub-tropical and dry areas as well.



3. Bambusa Balcooa

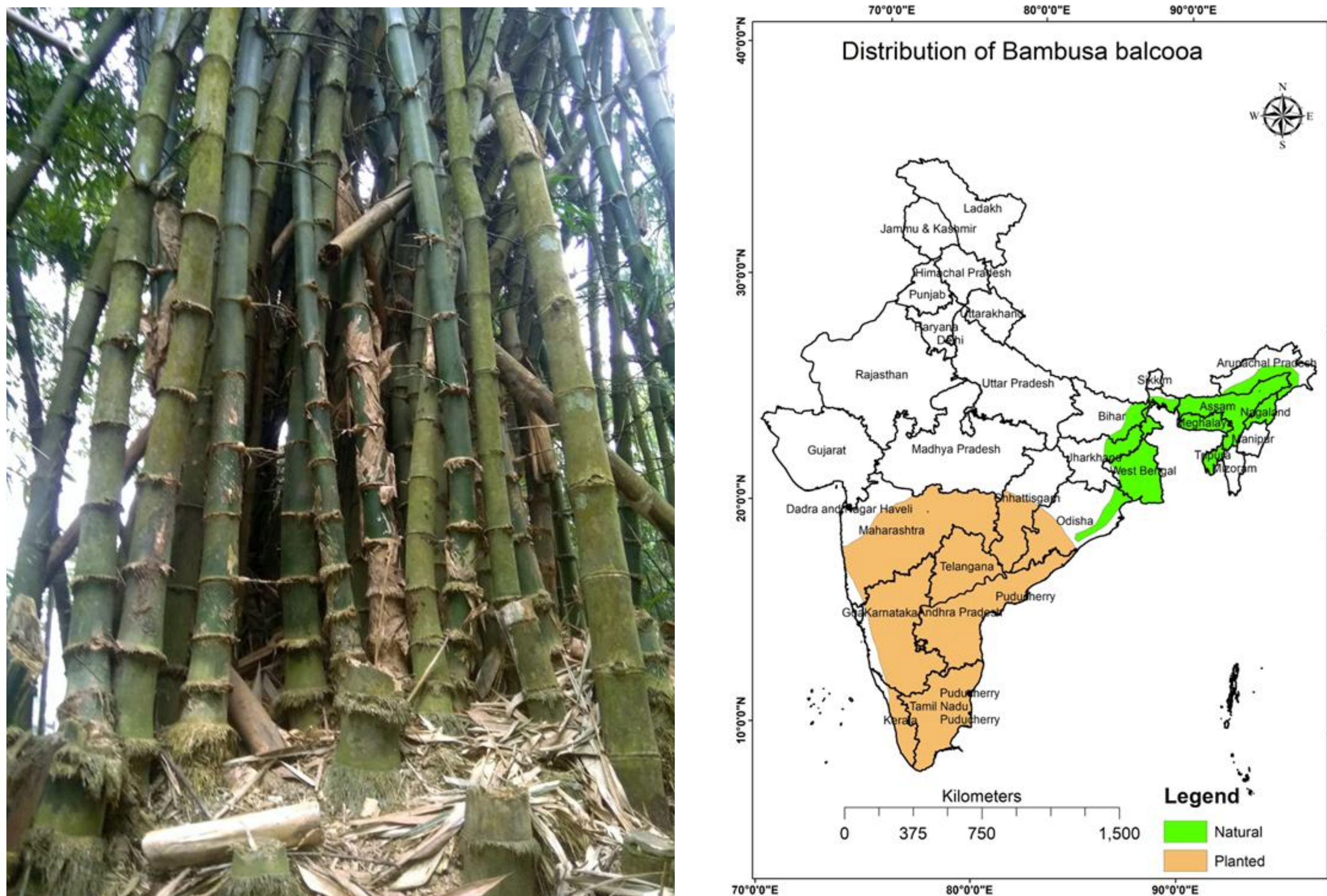


Fig. 19. Bambusa Balcooa

**Local names:** Baruwa (Manipur); Bhaluka (Arunachal Pradesh, Assam, Bengal) ; Beru (Meghalaya); Bhalu bans (Nagaland); Barak (Tripura)

**Uses:** Scaffolding, construction, ladders, Agarbatti sticks, edible shoots, paper

**Soil type-** Heavy textured soil with good drainage

**Climatic conditions–** tropical and tropical to sub tropical conditions

[Link- Bamboo Species](#)

4. Bambusa Cacharensis

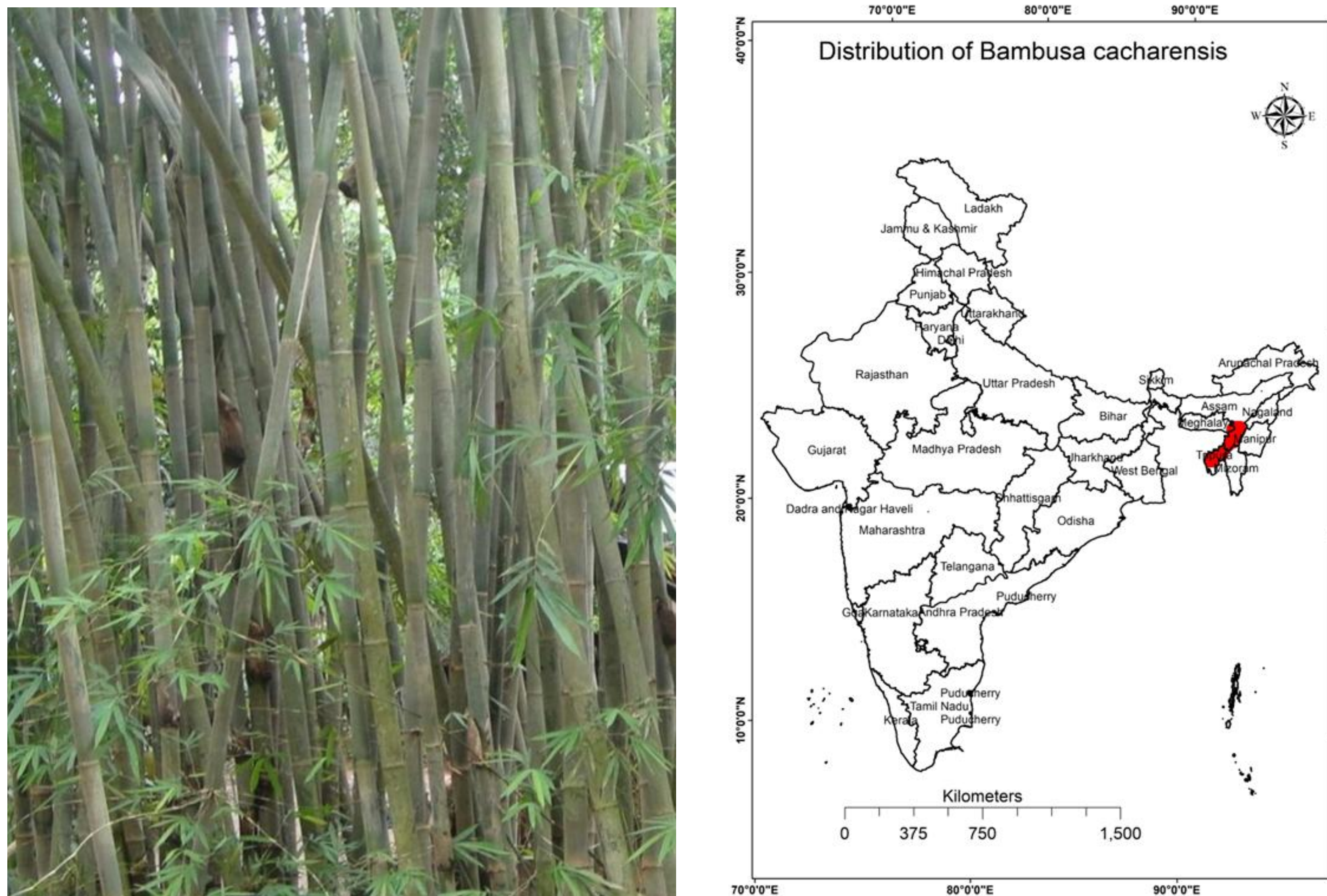


Fig. 20. Bambusa Cacharensis

**Local names:** Baruwa (Manipur); Bhaluka (Arunachal Pradesh, Assam, Bengal) ; Beru (Meghalaya); Bhalu bans (Nagaland); Barak (Tripura)

**Uses:** Scaffolding, construction, ladders, Agarbatti sticks, edible shoots, paper

**Soil type-** Heavy textured soil with good drainage

**Climatic conditions–** tropical and tropical to sub tropical conditions



5. Bambusa Polymorpha

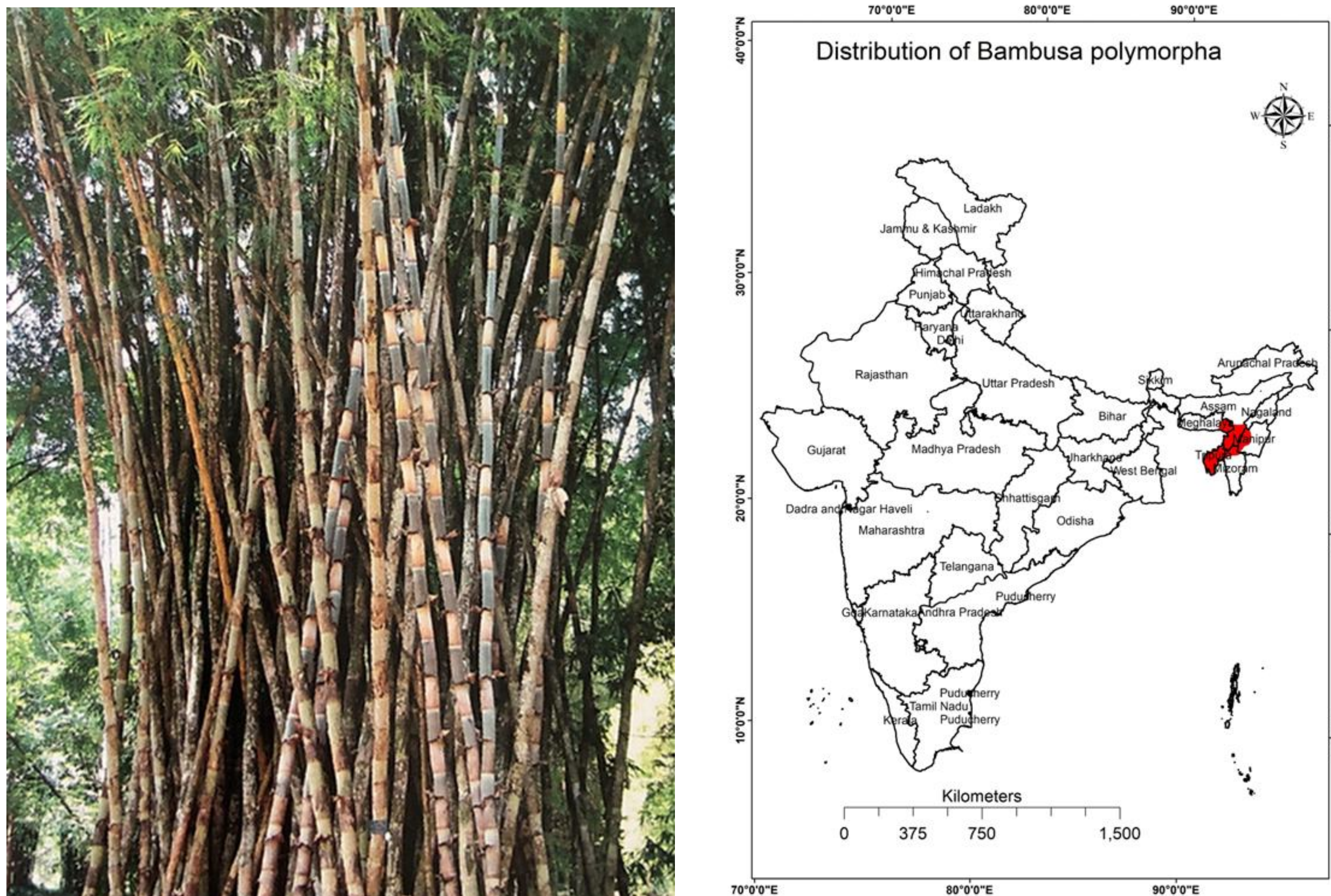


Fig. 21. Bambusa Polymorpha

**Local names:** betwa (Assam), narangibahn (MP), bari (Tripura)

**Uses:** house construction, woven matting, baskets, furniture, handicrafts, paper pulp and board making, edible shoots with a distinctly sweet taste, landscaping.

[Link- Bamboo Species](#)

6. Bambusa Nutans

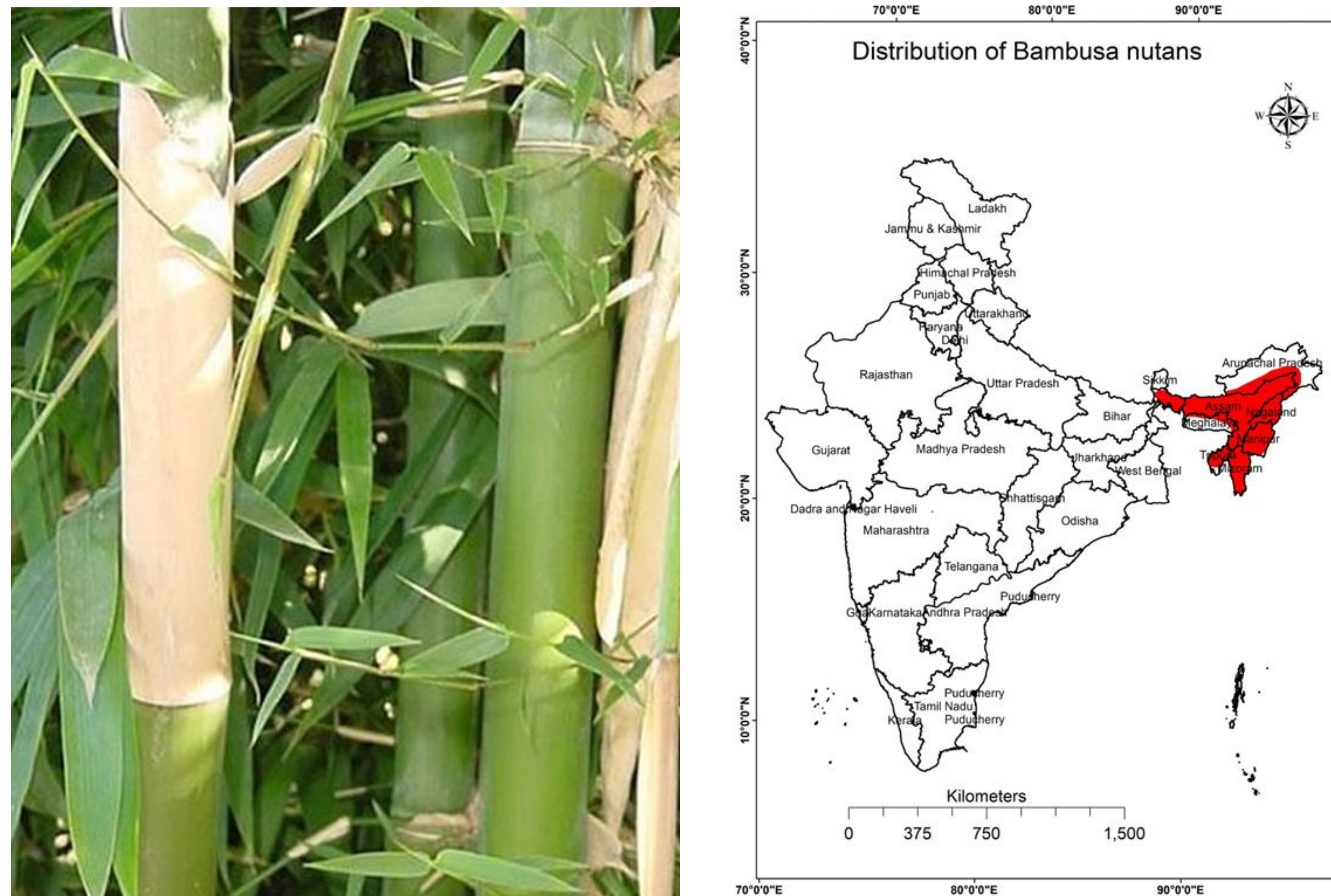


Fig. 22. Bambusa Nutans

**Local names:** deo bahn (Assam)

**Uses:** thick walled, baskets, fences, roofs and roof tiles, paper, for treating inflammation, ulcers and wounds



7. Dendrocalamus Asper

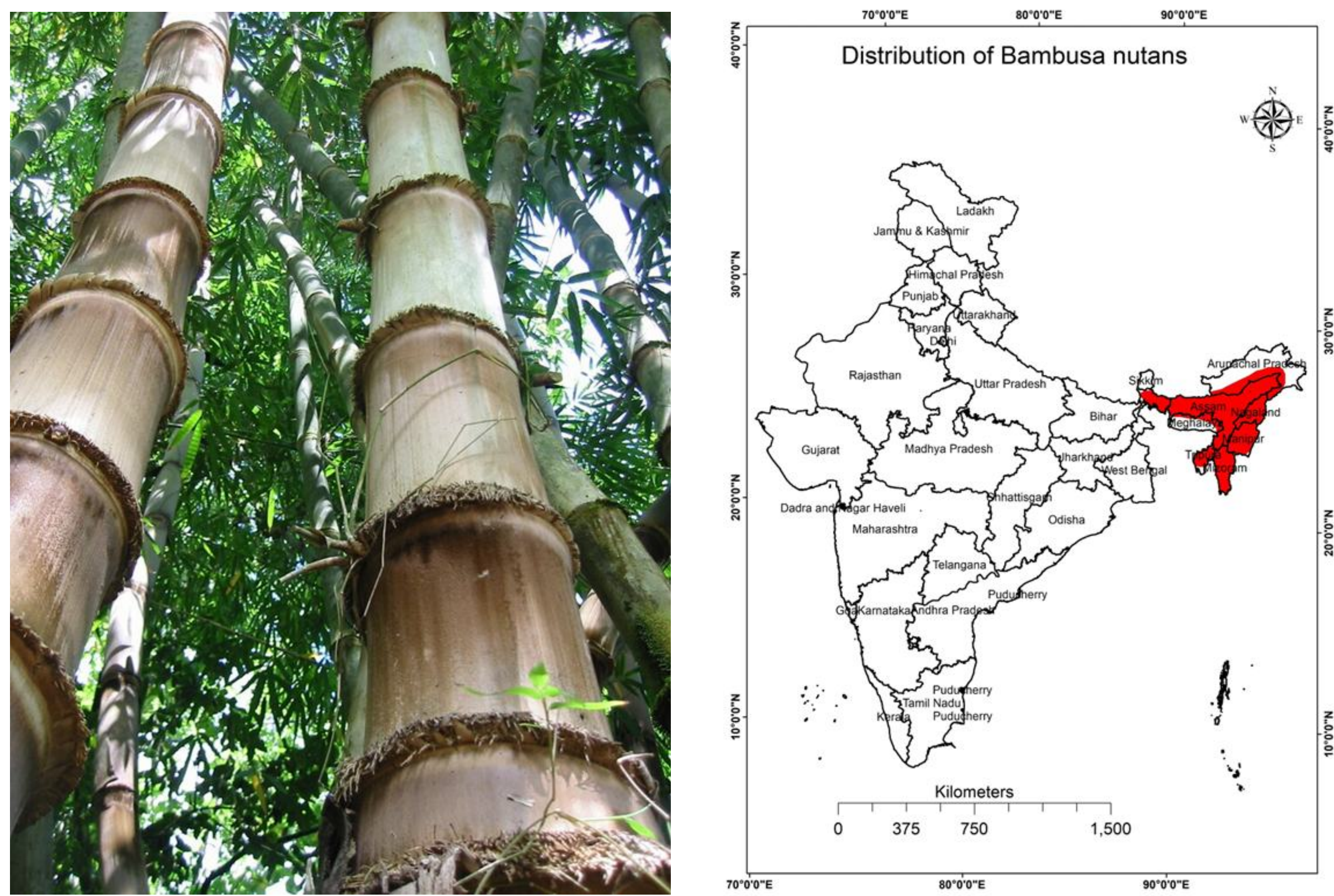


Fig. 23. Dendrocalamus Asper

**Local Name:** Sweet Bamboo, Rough bamboo Thaitama Bans (Sikkim)

**Uses:** Mainly grown for the high quality edible shoots. Poles are strong and useful in construction.

**Soil type-** black soils, Sandy clay loam or shallow lateritic soil mixed with fine sandy clay.

**Climatic condition-** sub tropical climate to tropical climate

[Link- Bamboo Species](#)

8. Thyrsostachys oliveri

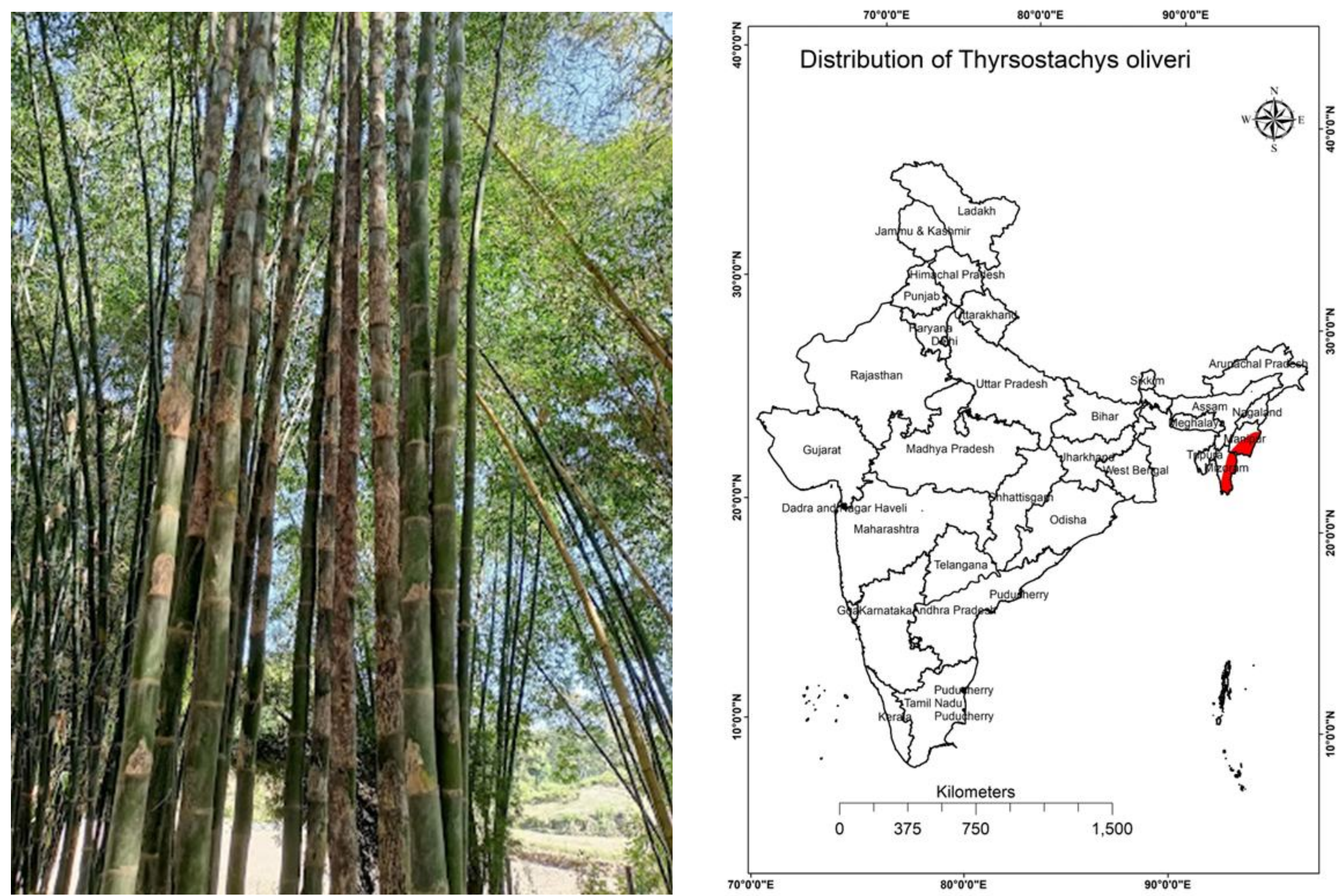


Fig. 24. Thyrsostachys oliveri

**Local Name:** Lathi mula ( Kerala); Kanak kainch (Tripura)

**Uses:** Construction, Furniture, baskets, umbrella, fishing rods, Sport goods, Edible shoots

**Soil type:** Well drained loamy soils.

**Climatic condition:** It prefers tropical climates.



9. Melocanna baciferra

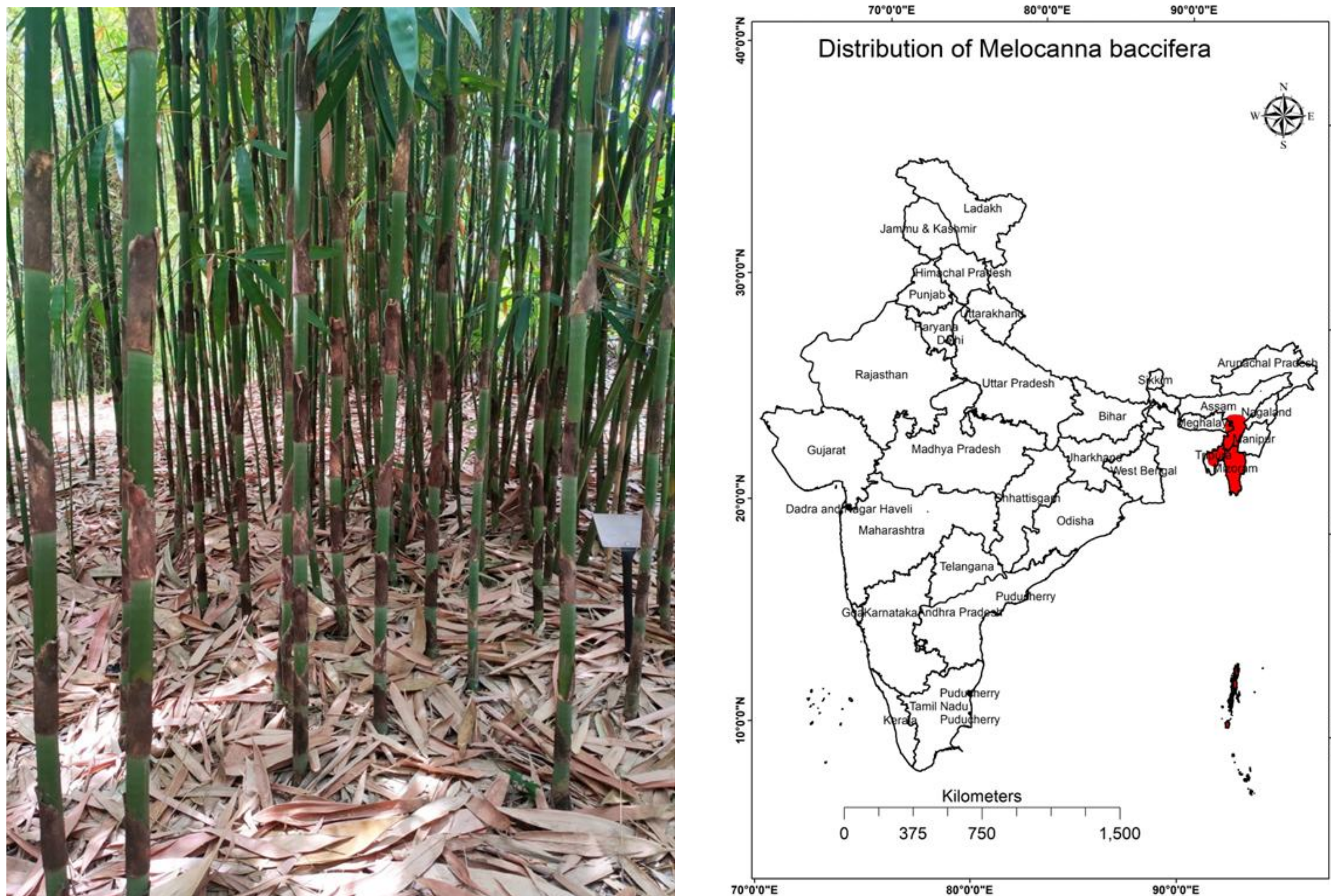


Fig. 25. Melocanna baciferra

**Local Name:** muli, monopodial Indian bamboo

**Uses:** Edible shoots, famine food, leaves for brewing liquor, **Tabashir** - a siliceous concretion found in the culms of the bamboo stem, can be collected from the culms and used as a tonic in treating respiratory diseases.

[Link- Bamboo Species](#)

10. Dendrocalamus Strictus – Solid Bamboo



Fig. 26. Dendrocalamus Strictus – Solid Bamboo

**Common Name:** Male Bamboo, Solid Bamboo, Calcutta Bamboo

**Region:** It is widely found across South and Southeast Asia, particularly India, Nepal, Bangladesh, Myanmar, and Thailand. It is also found in Cuba and El Salvador.

**Uses:** They are used for making house frames, rafters, tent poles, concrete reinforcement, walls, scaffolding, and fences. The leaves are used for thatching. Used by the British army in India for making lance shafts.



### 11. Dendrocalamus peculiaris – Solid Bamboo



Fig. 27. Dendrocalamus peculiaris – Solid Bamboo

Dendrocalamus peculiaris is a large, dense tropical bamboo native to Yunnan, China.

Impressive are the giant leaves, which can reach 40 cm in length. The stems of this bamboo are used as a building material, to produce paper pulp, and the shoots are used as food.

[Link- Bamboo Species](#)

### 12. Dendrocalamus peculiaris – Sinicus



Fig. 28. Dendrocalamus peculiaris – Sinicus

Dendrocalamus sinicus, also known as “Giant Dragon Bamboo”, is the largest bamboo in the world.

It has the tallest and biggest culms of any known bamboo species which can reach up to 46 meters in height, and up to 37 cm in diameter.

This gigantic clumping bamboo is native to Laos and the Yunnan Province of China where it has long enjoyed great prominence.



### 13. Dendrocalamus Membranaceus – Solid Bamboo



Fig. 29. Dendrocalamus Membranaceus – Solid Bamboo

Dendrocalamus membranaceus also known as Waya Bamboo and formerly classified as “Bambusa membranacea” is a medium-sized tropical clumping bamboo originating from Southeast Asia.

Found in Bangladesh, Cambodia, China, Laos, Myanmar, Thailand, Vietnam

This bamboo is used for building purposes, furniture, bamboo board, agricultural implements, slat traps, matting, chopsticks, basketry, handicrafts, and as props for fruit trees.

### 14. Dendrocalamus peculiaris – Sinicus



Fig. 30. Dendrocalamus peculiaris – Sinicus

Dendrocalamus asper also known as Rough Bamboo or Giant Bamboo is a giant tropical and subtropical dense clumping species native to Southeast Asia.

Found in Bangladesh, China, Indonesia, Laos, Myanmar, Philippines, Taiwan, Thailand, Vietnam

This timber bamboo is used as a building material for heavy construction, and shoots are consumed as a vegetable.

[Link- Bamboo Species](#)



### 15. Dendrocalamus Brandissi – Solid Bamboo



*Fig. 31. Dendrocalamus Brandissi – Solid Bamboo*

Dendrocalamus brandisii also known as Velvet Leaf Bamboo, Teddy Bear Bamboo, or Sweet Dragon Bamboo is one of the largest tropical clumping bamboos in the world. It grows native in Southeast Asia and is often used as a building material.

Found in India, Burma, Thailand, Laos, Vietnam, China

Culms are used for building construction, boat masts, furniture, farm implements, water pots, basketry, handicrafts, paper making. Shoots are edible and consumed as a vegetable.

[\*Link- Bamboo Species\*](#)



## 4.7. Bamboo Forms

### 1. Bamboo Slats

Bamboo slats are thin, elongated pieces of bamboo used in various applications such as flooring, paneling, and furniture making. They are typically made by splitting bamboo poles lengthwise into narrower strips using specialized tools or machinery. Once split, the bamboo strips may undergo further processing, such as planing or sanding, to achieve a smooth and uniform surface. The slats are then dried and treated to enhance their durability and resistance to pests and moisture. Finally, they are ready for use in a wide range of construction and decorative projects.



Fig. 32. Bamboo Slats Making Process

## 2. Bamboo Sticks

The industry uses two kinds of bamboo sticks- square and round. By manual process, only square sticks are produced.

Round sticks are produced using machines. Bamboo poles are cut into sections and then split into smaller pieces using manual tools. These pieces are then further refined to achieve a square shape through processes such as planing or trimming. Round bamboo sticks, on the other hand, are manufactured using machinery. Bamboo poles are fed into machines that cut and shape them into uniform round sticks with precise dimensions.



*Fig. 33. Bamboo Sticks Making Process*



### 3. Bamboo Slices

Bamboo slices are thin, flat pieces of bamboo used in various applications such as crafts, decor, and culinary purposes.

The process of making bamboo slices begins by dividing bamboo into strips of varying widths using a sharp knife. These strips are then further refined by peeling off the top layer to make them thinner. Additionally, the bamboo can be split into even thinner, flat strips using specialized tools or machinery. The resulting bamboo slices are versatile and can be used in a wide range of creative projects, including weaving, painting, and culinary arts. They offer a sustainable and eco-friendly alternative to other materials, adding a unique natural touch to any project.



*Fig. 34. Bamboo Strips Making Process*



4. Bamboo Fiber

Bamboo fiber is a natural textile material derived from bamboo plants. It is made by mechanically or chemically processing bamboo into a pulp, which is then extruded into fibers. These fibers are spun into yarns and woven or knitted into fabric. Bamboo fiber is known for its softness, breathability, and eco-friendliness, making it a popular choice for clothing, bedding, and other textile products.



Fig. 35. Bamboo Fiber



Fig. 36. Bamboo Fiber Making Process



## 4.8. Bamboo Strip Coiling

Bamboo strip coiling, also known as spun bamboo, is an ancient Vietnamese handicraft technique dating back 800 years. It involves carefully coiling thin strips of bamboo around a frame to create intricate designs and structures. This traditional method showcases the ingenuity of the Vietnamese people and is used in various home decor items and artisanal products.

### Spun Bamboo Production

- The bamboo used for spun bamboo is usually cut at the knot in about 70 to 80 cm.
- Once it comes into the village, the bamboo is then placed in a water-mud mixture for about 90 days.
- It is placed in this water-mud mixture to remove the sugar from the bamboo.
- Soaking in the mud for this length of time also avoids mold, and it helps control the bamboo from insect infestation.
- The bamboo is then taken out of the water-mud mixture and then left to dry in the sunlight.
- The material is then ready to be split and used for spun bamboo production.



Fig. 37. Bamboo Strips Coiling/Spuning



Fig. 38. Bamboo placed in water-mud



## Spinning Spun Bmaboo

- The bamboo is split to the required length
- A straightforward machine that helps them turn the bamboo into a round shape.
- These round shapes are then bent and then glued together.
- Usually, they are done in a flat form, and once the flat form is completed, it will then be bent or pulled over a ceramic or wooden form for the shape and size required.
- Once the spun bamboo is placed on the mold and the shape has been formed, the pieces are dipped in a glue mixture again and dried.



*Fig. 39. Clay application on Spun Bamboo*

## Finishing

- Bases are brought in from the handicraft villages.
- Clay is placed on the bases.
- Lacquer is painted on the bases.
- The pieces can also be stained.
- Spun bamboo can also be left natural



*Fig. 40. Spun Bamboo Drying*



## 4.9. Bamboo Weaving

Bamboo weaving is a type of bamboo working in which two distinct sets of bamboo strips are interlaced at normally right angles to form an object. The longitudinal lengths of bamboo are called the warp and the lateral lengths are known as the weft.

### Types of Bamboo Weaving

1. Chinese bamboo weaving
2. Japanese bamboo weaving
3. Korean sokuri
4. Taiwanese bamboo weaving
5. Jaapi (Assam, India)
6. Olia (Odisha, India; grain storage basket)



*Fig. 42. Bamboo Weaving*



## 1. Chinese Bamboo Weaving

Bamboo weaving in contemporary China is mainly used for household objects, such as furniture, tea sets, curtains, and lanterns.

Chinese bamboo weaving is a traditional craft dating back thousands of years, characterized by intricate designs and skilled craftsmanship. Artisans use thin strips of bamboo to create a wide range of products, including baskets, mats, hats, and decorative items. This ancient art form is deeply rooted in Chinese culture and continues to be practiced and celebrated for its beauty and cultural significance.



Fig. 43. Chinese Bamboo Weaving

## 2. Japanese Bamboo Weaving

Japanese bamboo weaving, known as "Takezaiku," is a traditional craft with a rich history spanning centuries. Artisans meticulously weave bamboo strips into intricate patterns to create various functional and decorative items such as baskets, trays, and screens. This ancient art form embodies the Japanese aesthetic of simplicity, elegance, and precision. It is deeply ingrained in Japanese culture and continues to be revered and practiced by skilled artisans today.

A number of bamboo plaiting and weaving techniques have developed in Japan in different regions throughout time. There are a number of standard weaving patterns, out of which hundreds of combinations can be made.

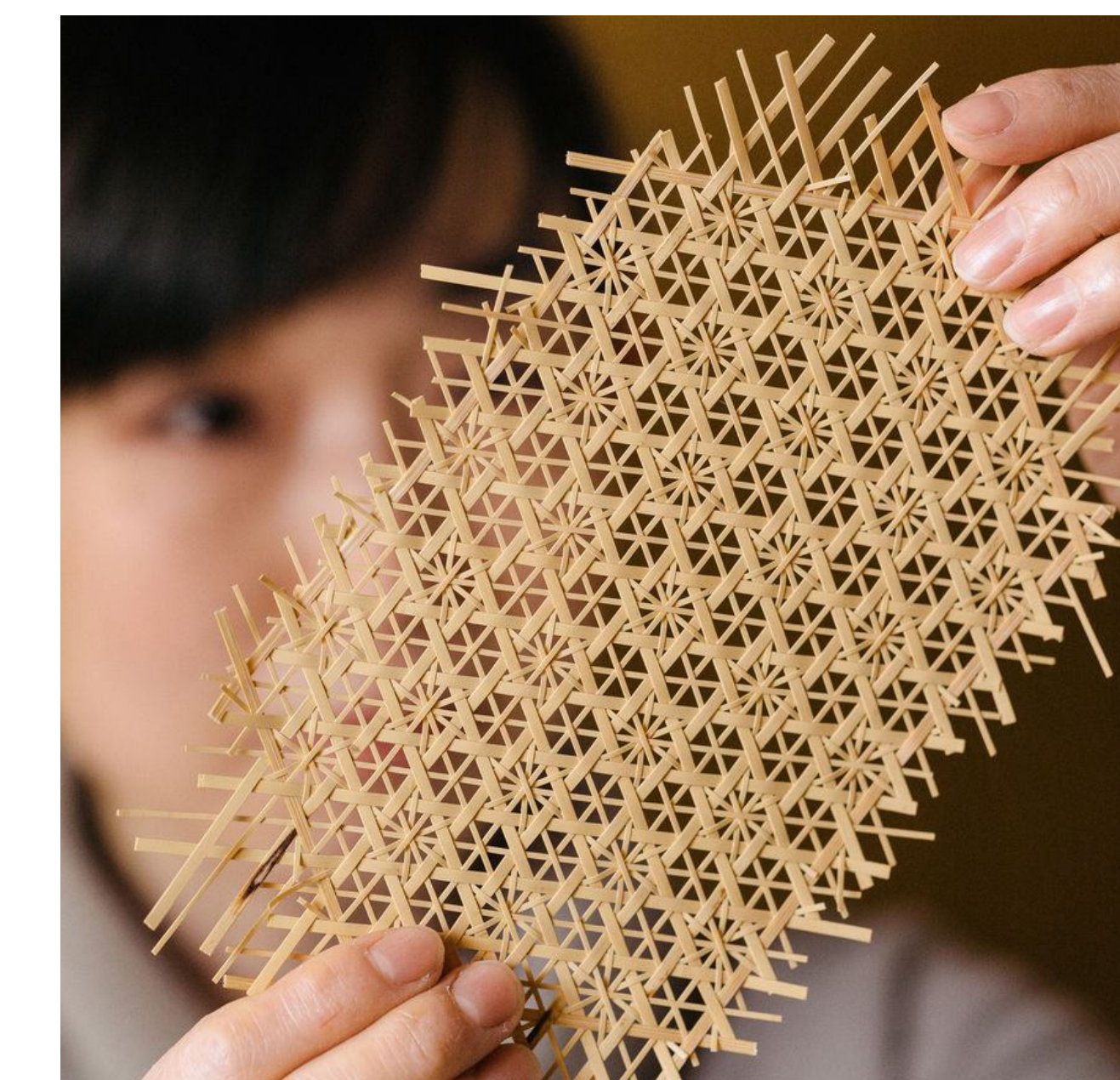


Fig. 44. Japanese Bamboo Weaving



### 3. Korean Bamboo Weaving

Korean bamboo weaving, known as "Jukbuin," is a traditional craft with a long history in Korean culture. Artisans skillfully weave bamboo strips into a variety of items, including baskets, mats, and fans. Korean bamboo weaving is characterized by its delicate patterns and attention to detail, reflecting the country's emphasis on craftsmanship and aesthetics. This ancient art form remains an important part of Korean heritage and is preserved and practiced by artisans throughout the country.

Sokuri is a round, rimmed woven basket made of finely-split bamboo. It is used for straining washed grains, drying vegetables, or draining fried food in Korea.



*Fig. 45. Korean Bamboo Weaving*

### 4. Taiwanese Bamboo Weaving

Taiwanese bamboo weaving, also known as "Jhushuei," is a traditional craft deeply rooted in Taiwanese culture. Artisans expertly manipulate bamboo strips to create a wide array of functional and decorative items, including baskets, hats, and utensils. Taiwanese bamboo weaving showcases intricate designs and meticulous craftsmanship, reflecting the island's rich cultural heritage and reverence for natural materials. This ancient art form continues to be practiced and celebrated, preserving Taiwan's traditional craftsmanship for future generations.



*Fig. 46. Taiwanese Bamboo Weaving*



5. Jaapi (Assam)

Jaapi bamboo weaving is a traditional craft indigenous to the Indian state of Assam. Artisans skillfully weave bamboo strips to create Jaapi hats, which are iconic symbols of Assamese culture. These hats are intricately designed and serve various purposes, including protection from the sun and rain, as well as cultural and ceremonial significance. Jaapi bamboo weaving reflects the craftsmanship and heritage of Assam, and continues to be cherished and practiced by artisans in the region.



Fig. 47. Assam Bamboo Weaving

6. Olia (Odisha)

Olia bamboo weaving is a traditional craft practiced in the Indian state of Odisha. Artisans skillfully weave bamboo strips to create a variety of products, including mats, baskets, and household items. Olia weaving is known for its intricate designs and durable construction, reflecting the rich cultural heritage of Odisha. This ancient craft continues to be an integral part of the state's cultural identity, passed down through generations of skilled artisans.



Fig. 48. Odisha Bamboo Weaving and Products



### 4.10. Industrial Processing of Bamboo

In industrial processing of bamboo, cultivation involves harvesting mature bamboo stalks, which are then cut into lengths and split into parts for further processing. These parts are then cut into strips of various lengths and widths according to specific requirements.

The nodes are removed, and the yellow and green outer skin is stripped away. Next, the bamboo undergoes a steaming process to treat for insects. After steaming, the bamboo strips are air-dried to remove excess moisture, preparing them for further processing or utilization in various industries.

The next steps involve strip planning according to specific requirements and sorting the strips into grades based on quality. The strips are then hot-pressed and glued together to form sheets. These sheets may undergo additional treatment to make the surface smooth, and adjustments are made to ensure uniform thickness.

[Link- Industrial Processing of Bamboo](#)

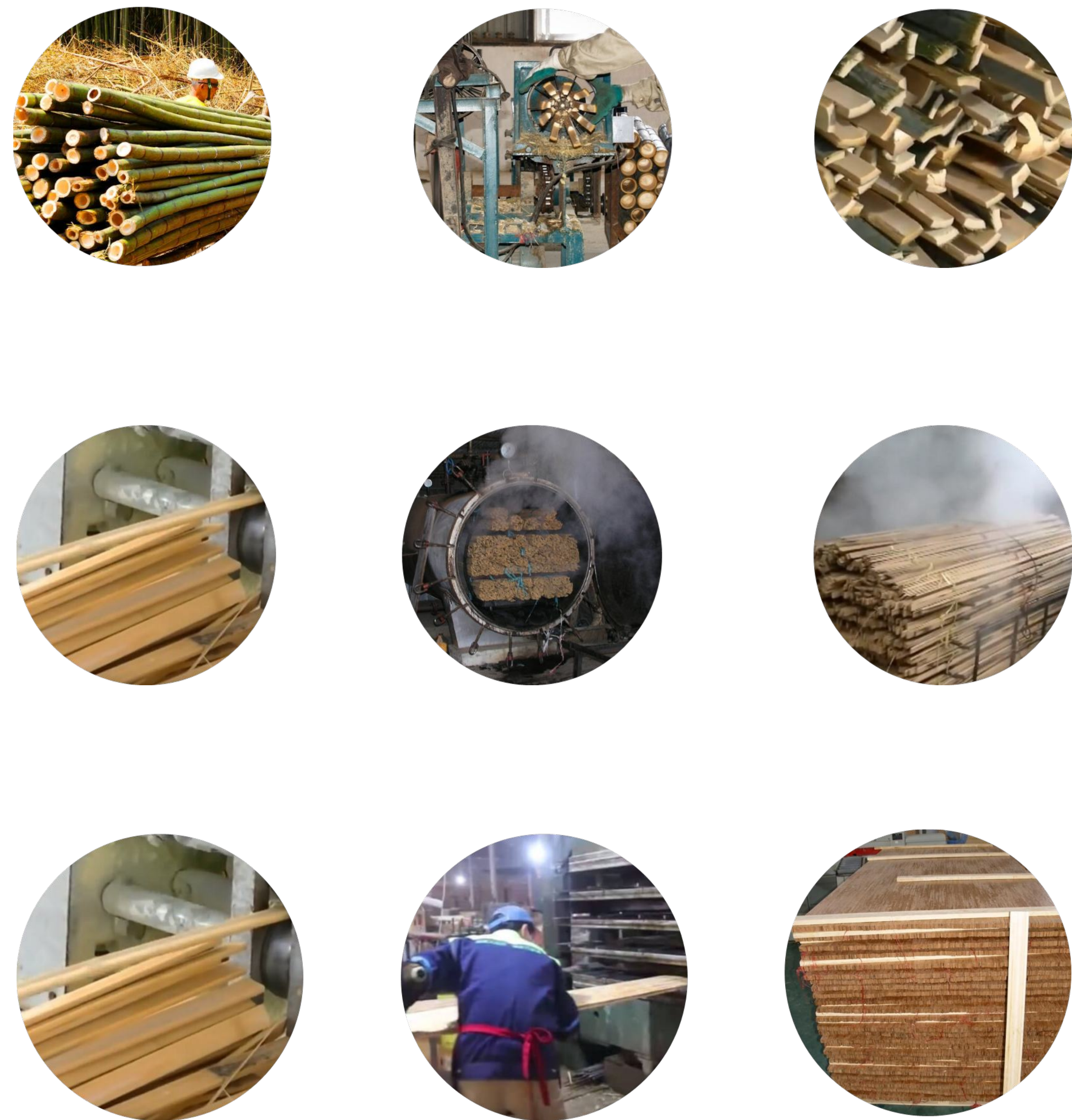
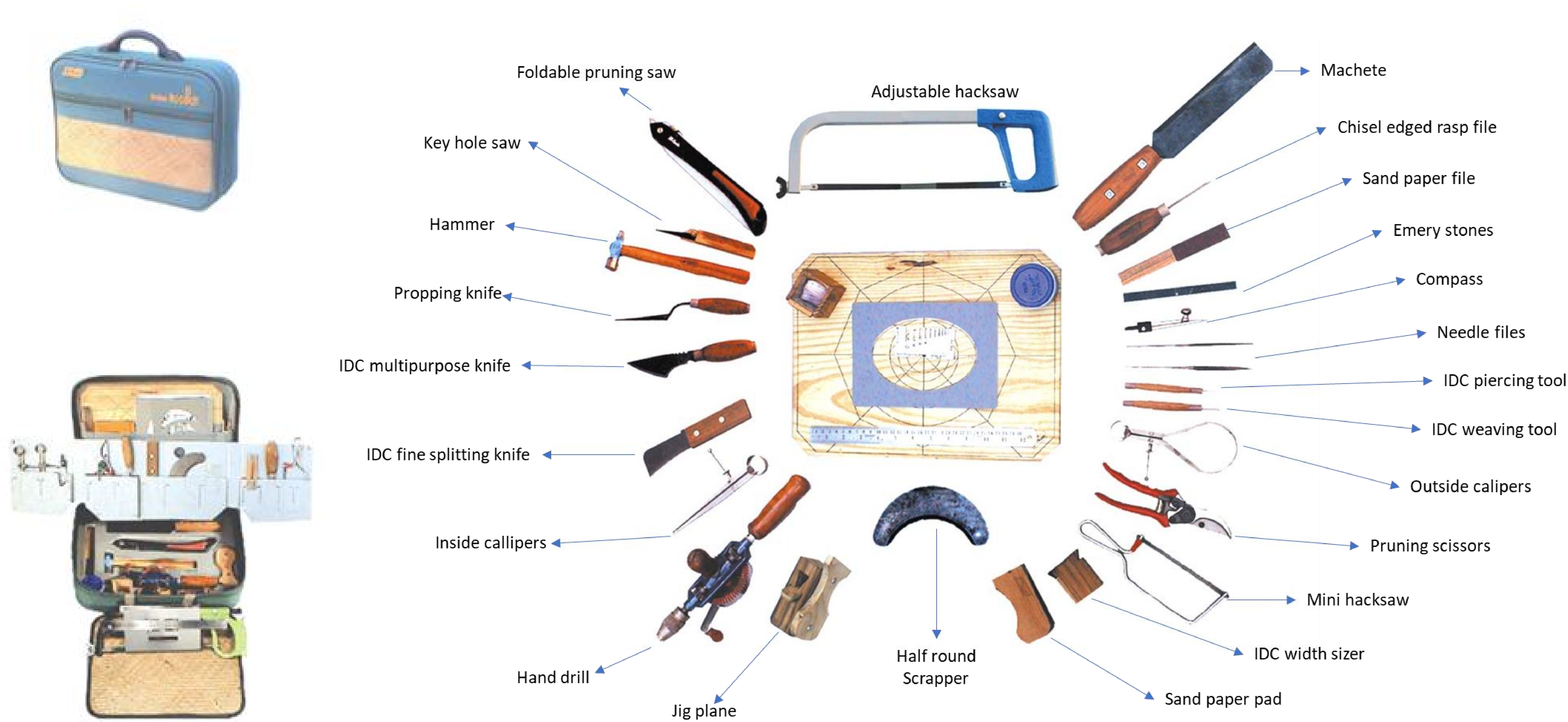


Fig. 49. Industrial Processing of Bmaboo



4.11. Tools for Bamboo

Tools used for cutting, splitting, scrapping, piercing, weaving, sanding activities. Below is the tool kit designed at IDC



[Link- Tools for Bamboo](#)

Fig. 50. Tools for Bamboo

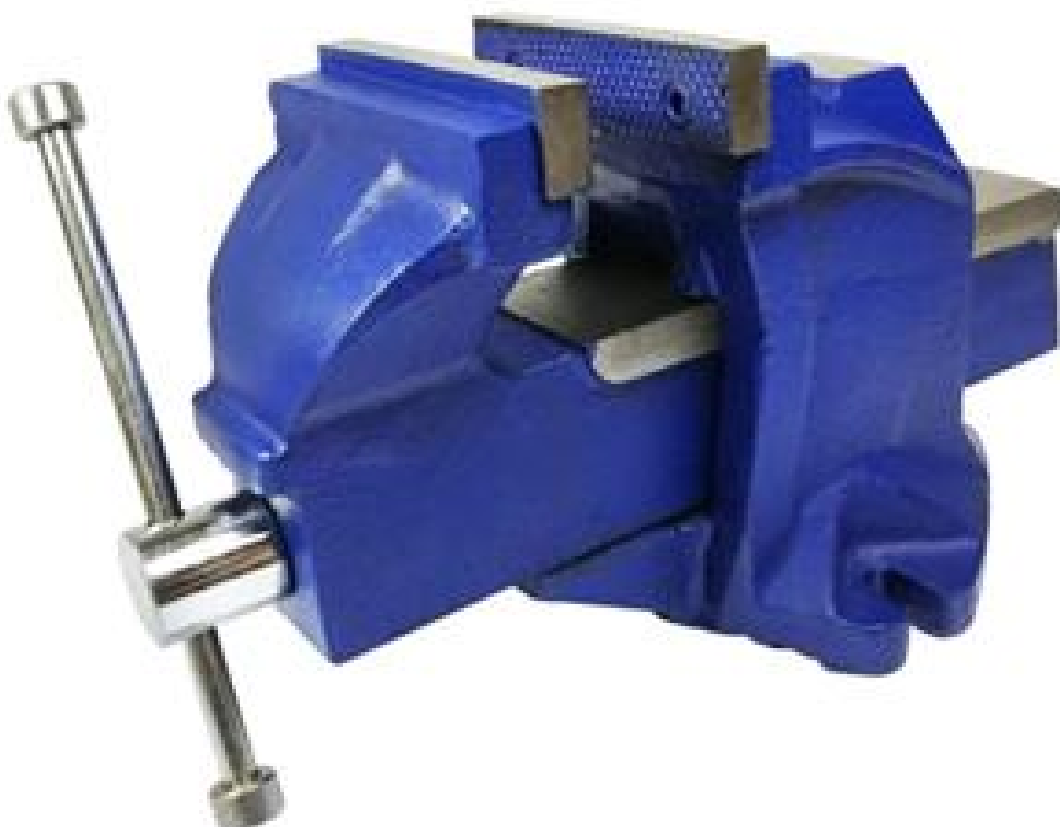


Machinery



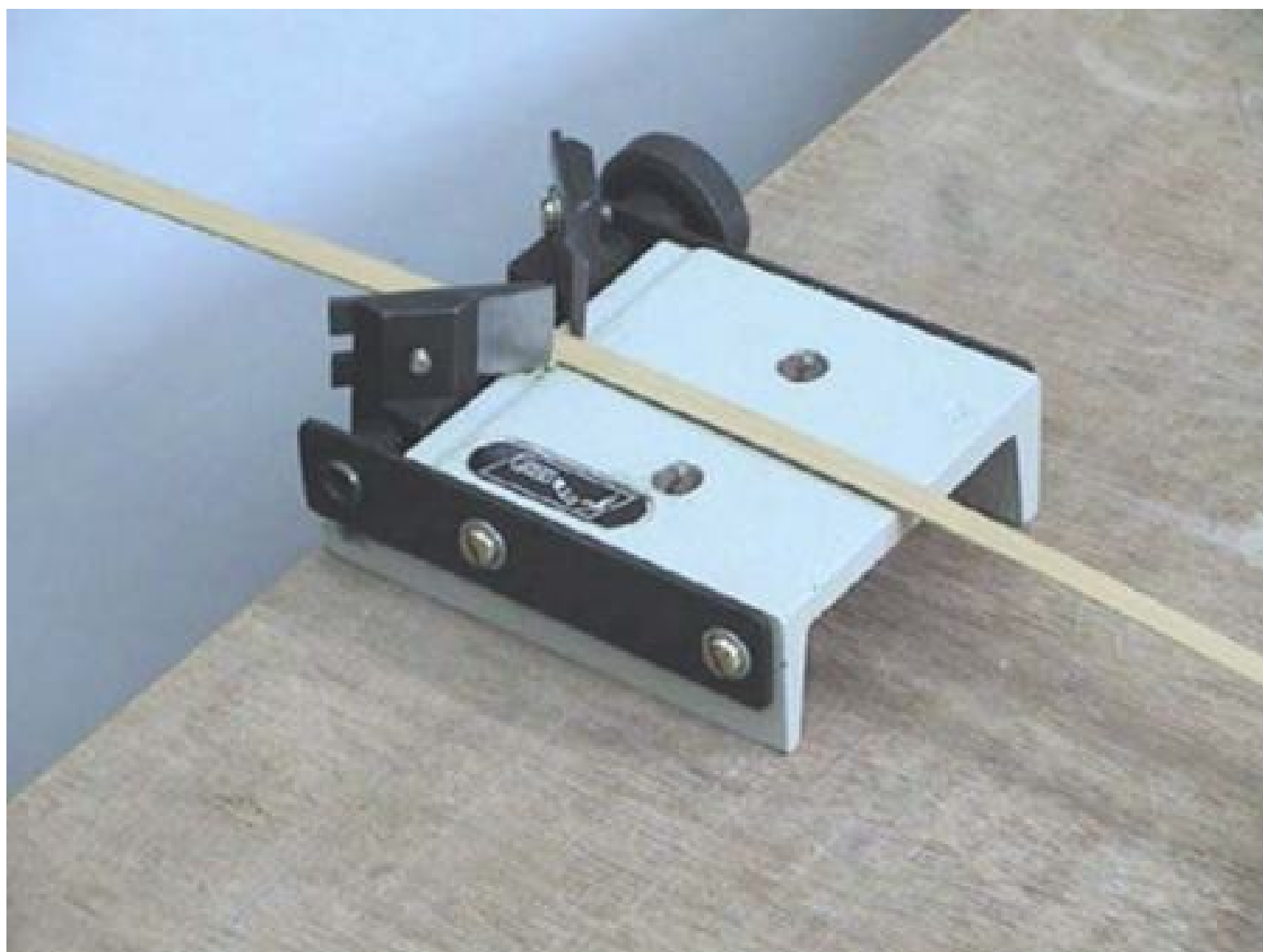
Strip Bending Machine

Hand-operated machine which helps in curling the thin strip of bamboo



Hand Vice

Hand-operated vice to fasten the bamboo for cutting with hacksaw



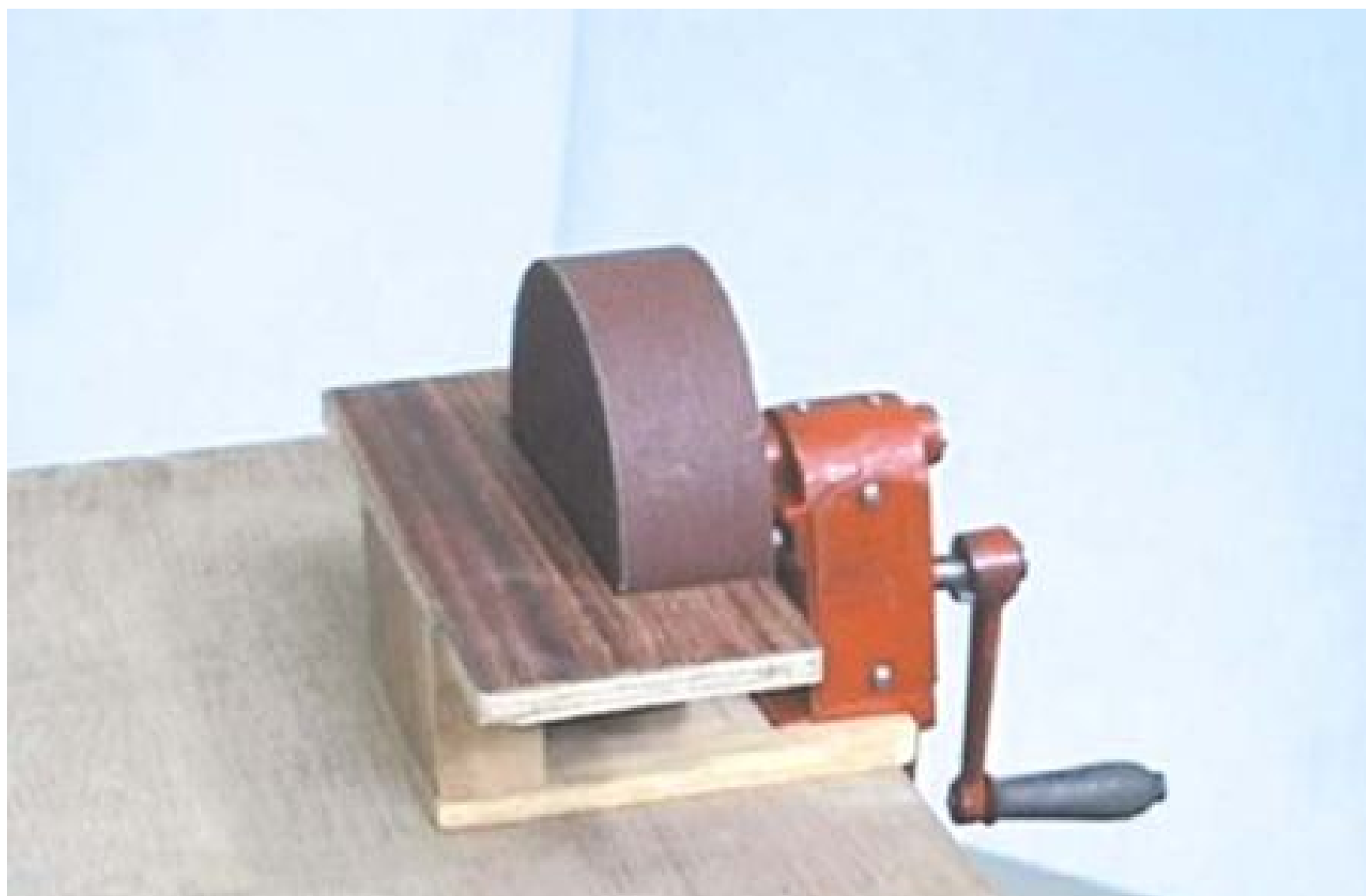
Width Sizer

Hand operated machine which helps in sizing the bamboo strip in equal width



Splitting Machine

Hand-operated machine that splits the slivers into parts



IDC Sander

Hand-operated grinder which helps in finishing bamboo strip, basket rims and surfaces



Thickness Sizer

Hand operated machine to even the thickness of bamboo strip by pulling it under the blade



Moulds & Fixtures

Moulds and fixtures are essential tools used in weaving bamboo strips to create various products such as baskets, mats, and furniture. These tools provide the necessary framework and shape for the weaving process, ensuring uniformity and precision in the final product. Moulds and fixtures come in various sizes and shapes, depending on the desired design and functionality of the end product. They enable artisans to weave bamboo strips with ease and efficiency, preserving traditional techniques while facilitating innovation in bamboo craftsmanship.



[Link- Moulds for Bamboo](#)

Fig. 51. Moulds for Bamboo Weaving



**Bamboo Auto Splitter Machine:** The Bamboo Auto Splitter Machine is a mechanized tool designed to streamline the process of splitting bamboo into smaller sections. Using automated mechanisms, it efficiently processes bamboo stalks, improving productivity and reducing manual labor.



*Fig. 52. Bamboo Auto Splitter Machine*

**Bamboo Slicer Two Stroke Machine:** The Bamboo Slicer Two Stroke Machine is a mechanized device designed to slice bamboo into thin sections using a two-stroke cutting mechanism. This machine enhances efficiency and precision in bamboo processing, making it ideal for various applications in industries such as furniture manufacturing and construction.



*Fig. 53. Bamboo Slicer Two Stroke Machine*

[Link- Prashant Bamboo Equipments](#)



**Bamboo Round Stick Making Machine:** The Bamboo Round Stick Making Machine is a specialized device designed to produce round sticks from bamboo poles. Using automated processes, it shapes and smoothens bamboo poles to create uniform round sticks of desired dimensions. This machine improves efficiency and consistency in bamboo processing for various applications, including furniture, handicrafts, and construction.



*Fig. 54. Bamboo Round Stick Making Machine*

**Inside Knot Remover with Slicing & Sizing Machine:** The Bamboo Inside Knot Remover with Slicing & Sizing Machine is a versatile tool designed to remove knots from bamboo poles while also slicing and sizing them to desired specifications. This machine streamlines the process of preparing bamboo for various applications, improving efficiency and reducing manual labor.



*Fig. 55. Inside Knot Remover with Slicing & Sizing Machine*

[Link- Prashant Bamboo Equipments](#)



**Bamboo Cross Cutter Machine:** The Bamboo Cross Cutter Machine is a specialized tool designed to cut bamboo poles into shorter lengths across the grain. This machine enhances efficiency in bamboo processing, enabling precise and uniform cuts for various applications such as furniture making, construction, and handicrafts.



*Fig. 56. Bamboo Cross Cutter Machine*

**Bamboo Stick Sizing Machine:** The Bamboo Stick Sizing Machine is a mechanized device designed to size bamboo sticks to uniform dimensions. This machine enhances efficiency in bamboo processing by ensuring consistency and precision in the sizing of sticks for various applications such as crafting, construction, and manufacturing.

*Fig. 57. Bamboo Stick Sizing Machine*

[Link- Prashant Bamboo Equipments](#)



**Bamboo Stick Polisher Machine:** The Bamboo Stick Polisher Machine is a specialized device designed to polish bamboo sticks, enhancing their appearance and smoothness. This machine improves the aesthetic quality of bamboo sticks, making them suitable for various applications such as crafting, furniture making, and decorative purposes.



*Fig. 58. Bamboo Stick Polisher Machine*

**Bamboo Square Stick Making Machine:** The Bamboo Square Stick Making Machine is a mechanized tool designed to produce square-shaped sticks from bamboo poles. This machine streamlines the process of shaping bamboo, creating uniform square sticks for various applications such as furniture making, construction, and handicrafts.



*Fig. 59. Bamboo Square Stick Making Machine*

[Link- Prashant Bamboo Equipments](#)



**Bamboo Hand Operated Stick Making Machine:** The Bamboo Hand Operated Stick Making Machine is a manual tool designed to produce bamboo sticks through hand-powered operation. This portable machine offers a simple and efficient solution for small-scale bamboo processing, enabling the creation of sticks for various applications such as crafts, gardening, and construction.



*Fig. 60. Bamboo Hand Operated Stick Making Machine*

**Bamboo Slicing Machine:** The Bamboo Slicing Machine is a specialized device designed to slice bamboo poles into thin sections. This machine enhances efficiency in bamboo processing, enabling precise and uniform slicing for various applications such as crafts, furniture making, and construction.



*Fig. 61. Bamboo Slicing Machine*

[Link- Prashant Bamboo Equipments](#)



**Incense Stick Bundling Machine:** The Incense Stick Bundling Machine is a mechanized device designed to bundle incense sticks together efficiently. This machine streamlines the packaging process, improving productivity and ensuring uniformity in the bundles for distribution and sale.



*Fig. 62. Incense Stick Bundling Machine*

**Bamboo Profile Shaping/ Spindle Moulder Machine:** The Bamboo Profile Shaping/Spindle Moulder Machine is a specialized tool designed to shape bamboo poles into specific profiles or designs. This machine enhances efficiency in bamboo processing, allowing for precise shaping and detailing for various applications such as furniture making, architectural detailing, and handicrafts.



*Fig. 63. Bamboo Profile Shaping/ Spindle Moulder Machine*

[Link- Prashant Bamboo Equipments](#)



**Bamboo Spoon Grooving Making Machine:** The Bamboo Spoon Grooving Making Machine is a specialized tool designed to carve grooves into bamboo spoons efficiently. This machine enhances productivity in bamboo spoon production, allowing for precise and uniform grooving for various applications such as cooking, serving, and crafting.



*Fig. 64. Bamboo Spoon Grooving Making Machine*

**Bamboo Long Stick Polisher Machine:** The Bamboo Long Stick Polisher Machine is a specialized device designed to polish long bamboo sticks efficiently. This machine enhances the appearance and smoothness of bamboo poles, making them suitable for various applications such as construction, furniture making, and handicrafts.



*Fig. 65. Bamboo Long Stick Polisher Machine*

[Link- Prashant Bamboo Equipments](#)



## 4.12. Understanding Making Process

### Making Process

- Thin bamboo sticks placed vertically are woven using thread with visible gaps to form a mat.
  - The woven bamboo stick is then wrapped from inside to broad bamboo strips forming the top and bottom rim.
  - Both the ends are then weaved into broad strips using very thin flexible bamboo strips.
- 
- The bottom part is made of hollow bamboo, sliced to form a square shape.
  - Solid wood is then pasted over it to connect it to the top part.



Fig. 66. Bamboo Desk Lamp at IDC



- Legs of bamboo are sharpened at one end with the strip coming out getting narrow.
- Thin Bamboo strips are then woven around the mould.
- Neck consists of thin flexible bamboo over which strips are woven to make it stiff.



*Fig. 67. Bamboo Basket at IDC*

- Bamboo strips are woven using strips with thick strips on two ends to form a mat.
- The woven bamboo stick then wrapped at one edge of half-cut bamboo and the other at acrylic sheet which is further connected to the bamboo.
- Holes are made to weave the strip into bamboo and acrylic sheet.



*Fig. 68. Bamboo Accessories at IDC*

- Bamboo straps are cut at both ends to make comb like teeth, further used in connecting two straps.
- Carving is done by putting cut marks and further slicing off remaining area.

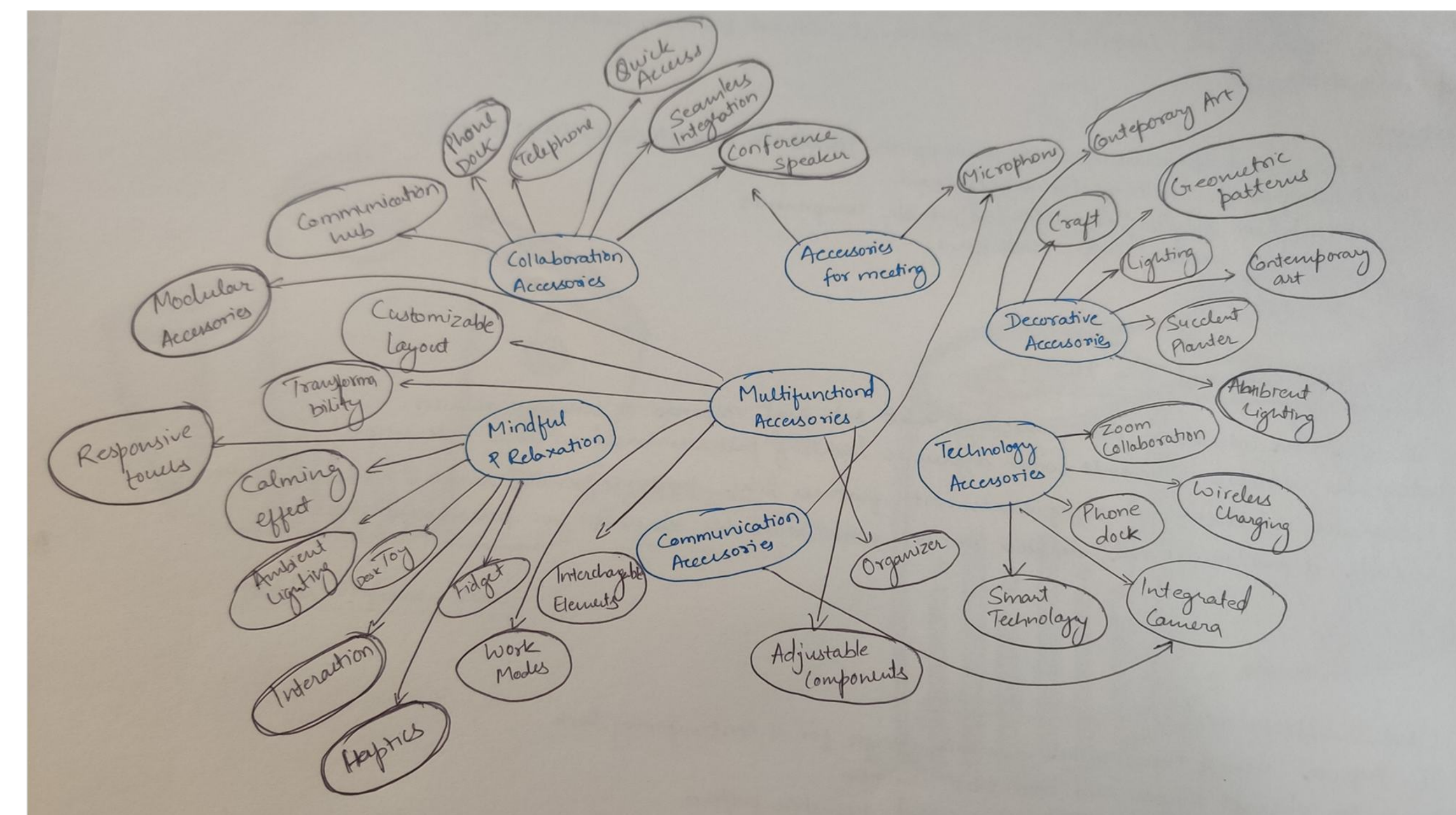
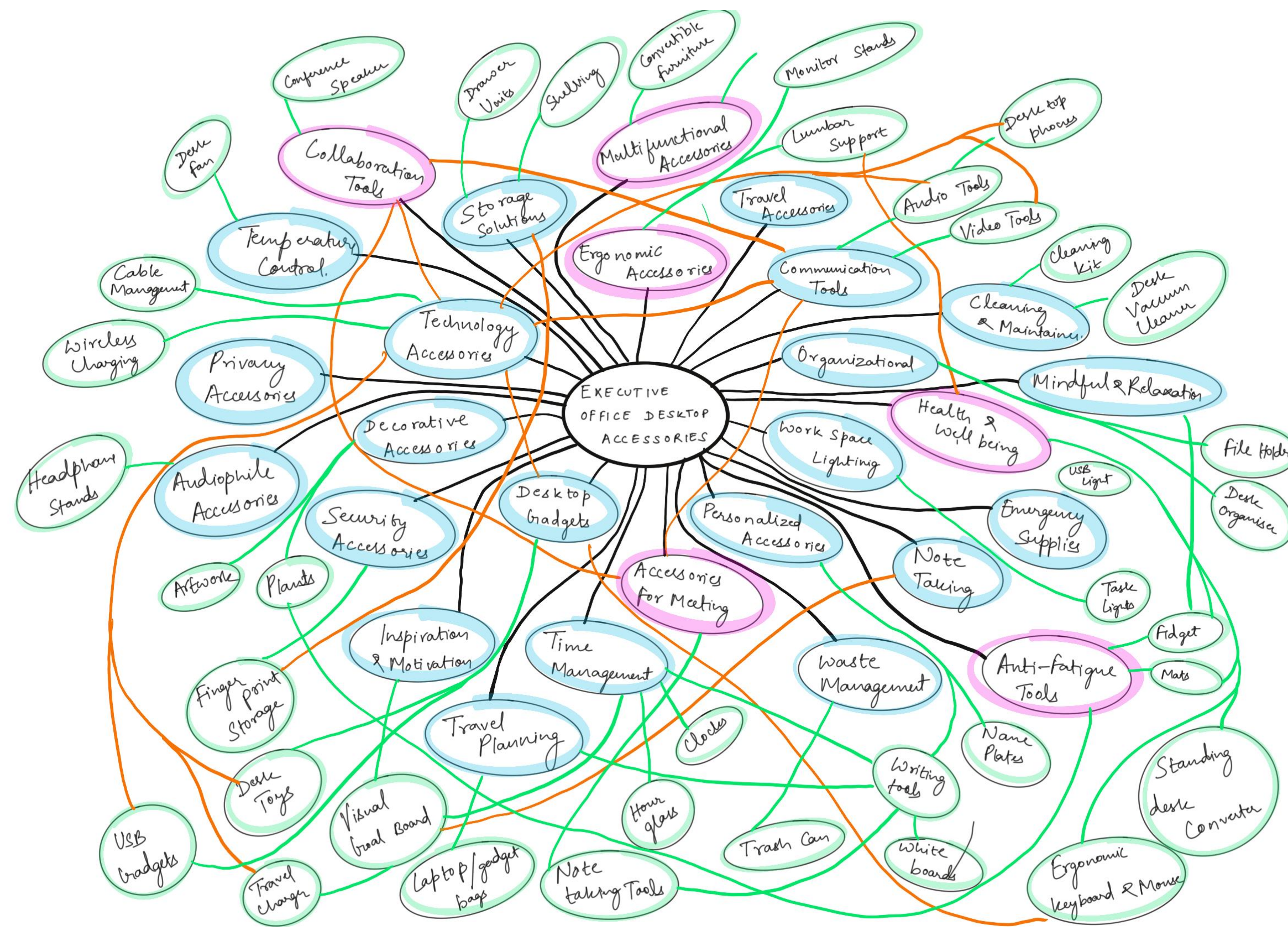


*Fig. 69. Bamboo Accessories at IDC*



## 5. Project Area Finalization

Through intensive brainstorming sessions, the project area for executive desk accessories was finalized. Ideas were explored and evaluated based on sustainability, functionality, and market demand. The decision was driven by a collective effort to innovate within the realm of eco-friendly materials, culminating in the selection of bamboo for its exceptional properties and alignment with the project's objectives.



*Fig. 70. Brainstorming*



## 6. Literature Study on Executive Offices

Executive office spaces are destined to accommodate authoritative positions that are used to approve, decide, and manage the actions of the organization or company.

Government executive offices serve as the nerve center of governance, where critical decisions are made and policies are formulated. These offices require space that exude professionalism, authority and commitment.



Fig. 71. Executive Offices



## 6.1. Understanding Executive offices

1. **Functionality:** Executive spaces prioritize functionality to facilitate efficient workflow and task completion, necessitating desk accessories that streamline organizational processes and enhance productivity.
2. **Aesthetic Appeal:** Executive spaces often reflect the prestige and professionalism of the occupants, requiring desk accessories that convey sophistication and style through sleek designs and premium materials.
3. **Status Symbol:** Desk accessories in executive spaces serve as status symbols, signaling authority and success. Therefore, they should be crafted with meticulous attention to detail and superior craftsmanship to uphold the executive's image.
4. **Organizational Needs:** Understanding the specific organizational needs within executive spaces is crucial for designing desk accessories tailored to accommodate paperwork, technology, and personal preferences while maintaining a clutter-free environment.
5. **Ergonomics:** Ergonomic considerations play a vital role in executive spaces, with desk accessories designed to promote comfort and support proper posture during extended periods of work.



## 7. Understanding Desk Accessories

Understanding executive desk accessories involves recognizing their significance as tools for organization, productivity, and personal expression in professional settings. These accessories must align with the executive's image, offering functionality, style, and status. Factors such as ergonomic design, customization options, integration of technology, and sustainability play vital roles in crafting desk accessories tailored to meet the specific needs and preferences of executives.

Desk accessories typically fall into categories such as organization (e.g., pen holders, file organizers), functionality (e.g., desk lamps, phone stands), personalization (e.g., photo frames, desk plaques), and technology (e.g., cable organizers, wireless chargers). These categories aim to enhance productivity, streamline workflow, and personalize the workspace according to individual preferences.



## 7.1 Categories of Desk Accessories

1. **Organizational Accessories:** Organizational accessories encompass items like pen holders, file organizers, and desk trays, designed to streamline workflow and maintain a clutter-free workspace. These accessories prioritize functionality, offering convenient storage solutions for essential office supplies and documents, thereby enhancing productivity and efficiency in professional settings.

**Desk Organizer:** These include trays, pen holders, and drawer organizers to keep essential items neatly arranged on the desk.

**File Holders:** Desktop file organizers or holders for important documents.



Fig. 72. File Holder and Pen Stand



**2. Workspace Lighting:** Workspace lighting refers to the illumination within a work environment, crucial for visibility, productivity, and overall well-being. It encompasses natural light, ambient lighting, and task lighting, each serving specific purposes to create a comfortable and conducive atmosphere for work. Proper workspace lighting reduces eye strain, enhances concentration, and promotes a productive work environment.

**Desk Lamps:** : Adjustable and stylish lamps to provide proper lighting for the workspace

**Task Lights:** Specialized lights designed to reduce eye strain during tasks.



*Fig. 73. Desk Lamp*



**3. Desktop Gadgets:** Desktop gadgets are small, often electronic, devices designed to enhance productivity or provide entertainment on a desk. These can include items like USB hubs, desk fans, digital clocks, or novelty gadgets like stress balls or mini zen gardens. They offer convenience and utility, often serving as useful additions to a workspace.

**Desk Toys :** Fun and decorative items like stress balls or kinetic sculptures.

**USB Gadgets:** Devices like USB-powered fans, cup warmers, or desktop speakers.



Fig. 74. Desk Fidget and USB Gadgets



**4. Technology Accessories:** Technology accessories are items designed to complement and enhance the functionality of electronic devices in a workspace. Examples include laptop stands, wireless chargers, cable organizers, and USB hubs. These accessories facilitate connectivity, organization, and ergonomic usage of technology, optimizing the efficiency and comfort of the work environment.

**Cable Management:** Clips, organizers, and cable holders to keep cables tidy.

**Wireless Chargers:** Charging pads for smartphones, tablets, and other compatible devices.



Fig. 75. Cable Manager and Wireless Charger



**5. Ergonomic Accessories:** Ergonomic accessories are designed to promote comfort and reduce strain in the workspace. Examples include ergonomic keyboards, mouse pads with wrist support, adjustable monitor stands, and ergonomic chairs. These accessories aim to improve posture, prevent repetitive strain injuries, and enhance overall well-being during prolonged periods of work.

**Ergonomic Chairs:** Adjustable chairs with lumbar support for comfort during long hours.

**Monitor Stands:** Elevate the computer monitor to eye level to reduce neck strain.



*Fig. 76. Lumbar Support and Monitor Stand*



**6. Personalized Accessories:** Personalized accessories add a touch of individuality to the workspace. These can include items like custom desk plaques, engraved pen holders, or photo frames. They allow individuals to personalize their workspace according to their preferences, creating a more engaging and inspiring environment for work.

**Customizable Desk Nameplates:** Executive nameplates that can be personalized.

**Personalized Stationery:** Customized notepads, pens, and other writing tools.



*Fig. 77. Customizable Nameplate and Notepad*



7. **Communication Accessories:** Communication accessories facilitate effective communication in the workspace. Examples include conference call speakers, headsets with microphones, and webcam covers. These accessories enable clear and efficient communication during virtual meetings, presentations, and collaborations, ensuring seamless connectivity and interaction among team members.

**Desktop Phones:** Executive-level phones with advanced features.

**Webcams and Microphones:** High-quality audio and video accessories for virtual meetings.



Fig. 78. Lumbar Support and Monitor Stand



8. **Decorative Accessories:** Decorative accessories add aesthetic appeal to the workspace. These include items like desk plants, artwork, decorative sculptures, or stylish desk organizers. They contribute to a visually pleasing and inspiring environment, enhancing the ambiance and personalizing the workspace to reflect individual taste and style.

**Artwork and Sculptures:** Decorative pieces to enhance the aesthetic of the workspace.

**Plants:** Small potted plants or succulents to add a touch of nature.



Fig. 79. Desk Plants and Book Holder



**9. Meeting Accessories:** Meeting accessories facilitate smooth and productive meetings in the workspace. Examples include whiteboards, conference room tables, presentation clickers, and name tags. These accessories support effective communication, collaboration, and organization during meetings, ensuring that discussions run smoothly and goals are achieved efficiently.

**Conference Call Accessories:** Items like speakerphones and microphone arrays

**Whiteboard and Easel:** Tools for impromptu brainstorming and note-taking.



Fig. 80. Conference Speaker and Notepad



**10. Health and Well-being Accessories:** Health and well-being accessories promote physical comfort and mental wellness in the workspace. Examples include ergonomic chairs, standing desks, stress-relief gadgets, and desk exercise equipment. These accessories aim to reduce physical strain, alleviate stress, and enhance overall health and productivity in the workplace.

**Standing Desk Converter:** Adjustable platforms to convert a regular desk into a standing desk.

**Ergonomic Keyboard and Mouse:** : Designed to reduce strain on wrists and hands.



*Fig. 81. Standing Desk and Ergonomic Keyboard and Mouse*



**11. Security Accessories:** Security accessories help safeguard sensitive information and protect assets in the workspace. Examples include laptop locks, document safes, webcam covers, and RFID-blocking card holders. These accessories mitigate the risk of data breaches, theft, and unauthorized access, ensuring the security and confidentiality of information within the workspace.

**Biometric Devices:** Fingerprint or facial recognition devices for added security

**Lockable Storage:** Cabinets or drawers with locks for confidential documents



*Fig. 82. Lockable Storage and Biometric Device*



**12. Time Management Accessories:** Time management accessories assist in optimizing productivity and organizing tasks in the workspace. Examples include desk calendars, timers, task organizers, and productivity apps. These accessories help individuals prioritize tasks, manage deadlines, and track progress, ultimately improving efficiency and achieving goals effectively within the allotted time frame.

**Desk Clocks:** Analog or digital clocks for keeping track of time.

**Hourglass Timers:** Decorative timers for short intervals or breaks.



*Fig. 83. Desk Clock and Hourglass*



**13. Inspiration and Motivation Accessories:** Inspiration and motivation accessories provide encouragement and creativity in the workspace. Examples include motivational posters, inspirational quotes, vision boards, and affirmation cards. These accessories aim to inspire individuals, foster creativity, and maintain a positive mindset, ultimately enhancing productivity and well-being in the workplace.

**Inspirational Posters:** Motivational posters or artwork for the workspace.

**Vision Boards:** Boards to display goals, aspiration, and inspiration



Fig. 84. Inspirational P[osters



**14. Multi-Functional Accessories:** Multi-functional accessories serve multiple purposes in the workspace, optimizing functionality and efficiency. Examples include desk organizers with built-in USB hubs, wireless charging pads with storage compartments, and combination desk lamps with phone holders. These accessories maximize utility and space utilization, offering convenience and versatility in a compact design.

**Desk Accessories Set:** Coordinated sets with various functional items.

**Convertible Accessories:** Furniture pieces that serve multiple purposes, such as a desk that transforms into a whiteboard.



Fig. 85. Desk Accessories Set and Convertible Accessories



**15. Audiophile Accessories:** Audiophile accessories enhance audio experiences in the workspace. Examples include high-fidelity headphones, desktop speakers, DAC (digital-to-analog converter) units, and headphone stands. These accessories prioritize audio quality and clarity, elevating the listening experience for music, podcasts, conference calls, and multimedia presentations in the workspace.

**Headphone Stands:** Stands for organizing and displaying headphones.

**Desktop Speakers:** High-quality speakers for listening to music or conference calls.



*Fig. 86. Headphone Stand and Desktop Speaker*



**16. Mindfulness and Relaxation Accessories:** Audiophile accessories enhance audio experiences in the workspace. Examples include high-fidelity headphones, desktop speakers, DAC (digital-to-analog converter) units, and headphone stands. These accessories prioritize audio quality and clarity, elevating the listening experience for music, podcasts, conference calls, and multimedia presentations in the workspace.

**Desktop Fountains:** Miniature water features for a calming effect

**Fidget Toys:** Stress-relief toys to promote focus and relaxation.



*Fig. 87.Desk Fidget and Desk Fountain*



## 8. Market Analysis of Desk Accessories

Market analysis of desk accessories involves examining trends, demand, and competition within the industry. Factors such as consumer preferences, pricing, distribution channels, and market segmentation are assessed to identify opportunities and challenges. This analysis informs strategic decision-making and product development to effectively target and serve the needs of the target market.

Market analysis was conducted for various categories of desk accessories, including organizer accessories, collaboration accessories, multifunctional accessories, lighting accessories, decorative accessories, and mindful and relaxation accessories. This involved evaluating consumer preferences, market trends, competitive landscape, pricing strategies, and distribution channels to identify opportunities and challenges in each segment. Insights gained from the analysis informed strategic decision-making and product development to effectively address the needs of the target market and capitalize on emerging trends in the workspace accessory industry.



8.1. Market Analysis of Organiser Accessories



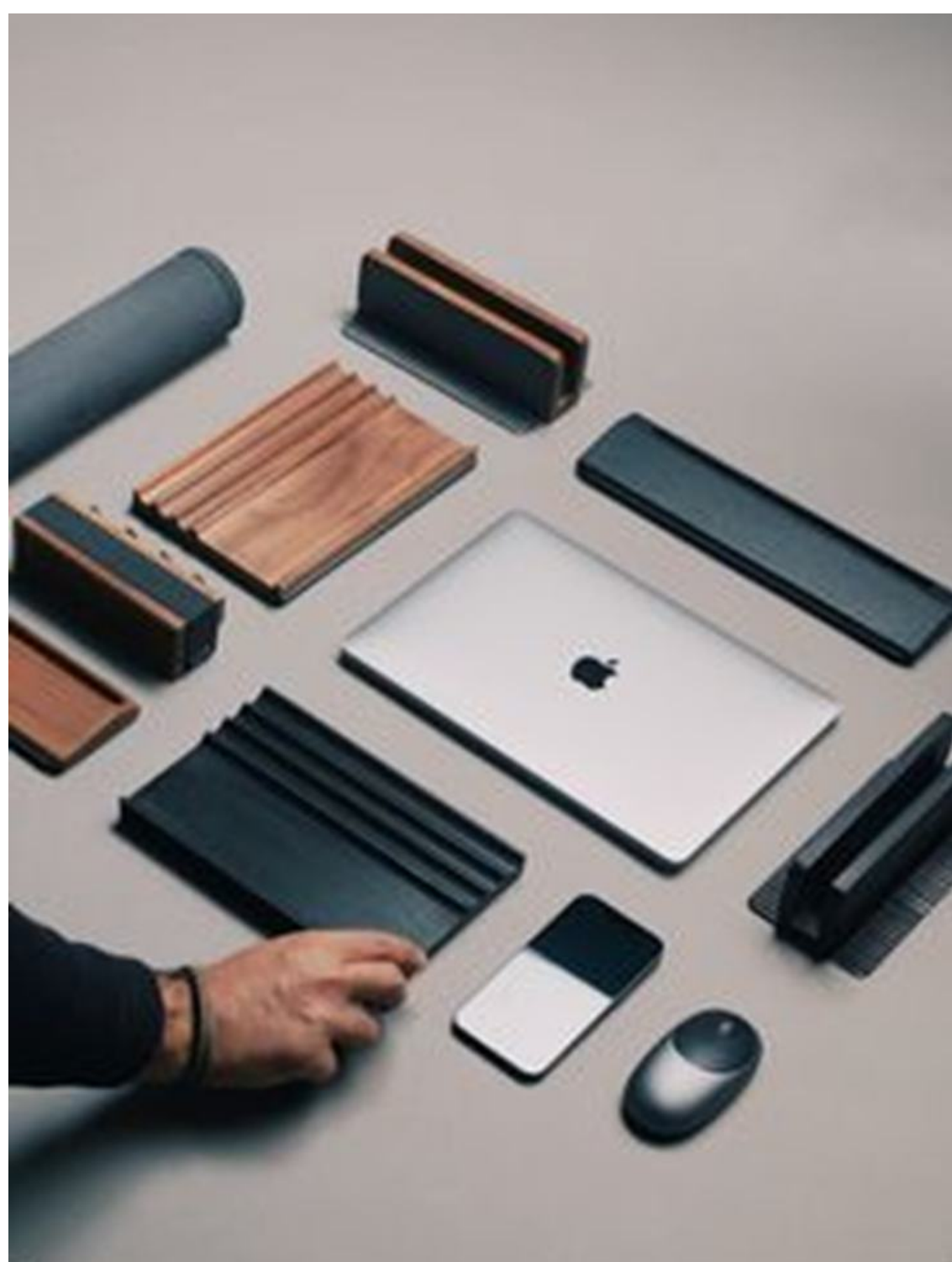
Price Rs. 5000



Price Rs. 2000



Price Rs. 2000



Price Rs. 7000



Price Rs. 3000



Price Rs. 4000



Price Rs. 2000



Price Rs. 3000

Source - Amazon.com

Fig. 88. Desk Organizer Accesories



8.2. Market Analysis of Collaboration Accessories



Price Rs. 15000



Price Rs. 18000



Price Rs. 35000



Price Rs. 7000



Price Rs. 5000



Price Rs. 8000



Price Rs. 4000



Price Rs. 32000

Source - Amazon.com

Fig. 89. Collaboration Accessories



8.3. Market Analysis of Multi-Functional Accessories



Price Rs. 2000



Price Rs. 5000



Price Rs. 5000



Price Rs. 6000



Price Rs. 20000

Source - Amazon.com

Fig. 90. Multifunctional Accessories



8.4. Market Analysis of Lighting Accessories



Price Rs. 15000



Price Rs. 15000



Price Rs. 12000



Price Rs. 8000



Price Rs. 5000



Price Rs. 8000



Price Rs. 4000



Price Rs. 10000

Source - Amazon.com

Fig. 91. Lighting Accessories



8.5. Market Analysis of Decorative Accessories



Bamboo Flower Pot



Wooden Decorative Bird



Decorative Bamboo Snake



Decorative Wooden Toy Set



Bamboo Vase



Wooden Toy



Decorative Bamboo Toy



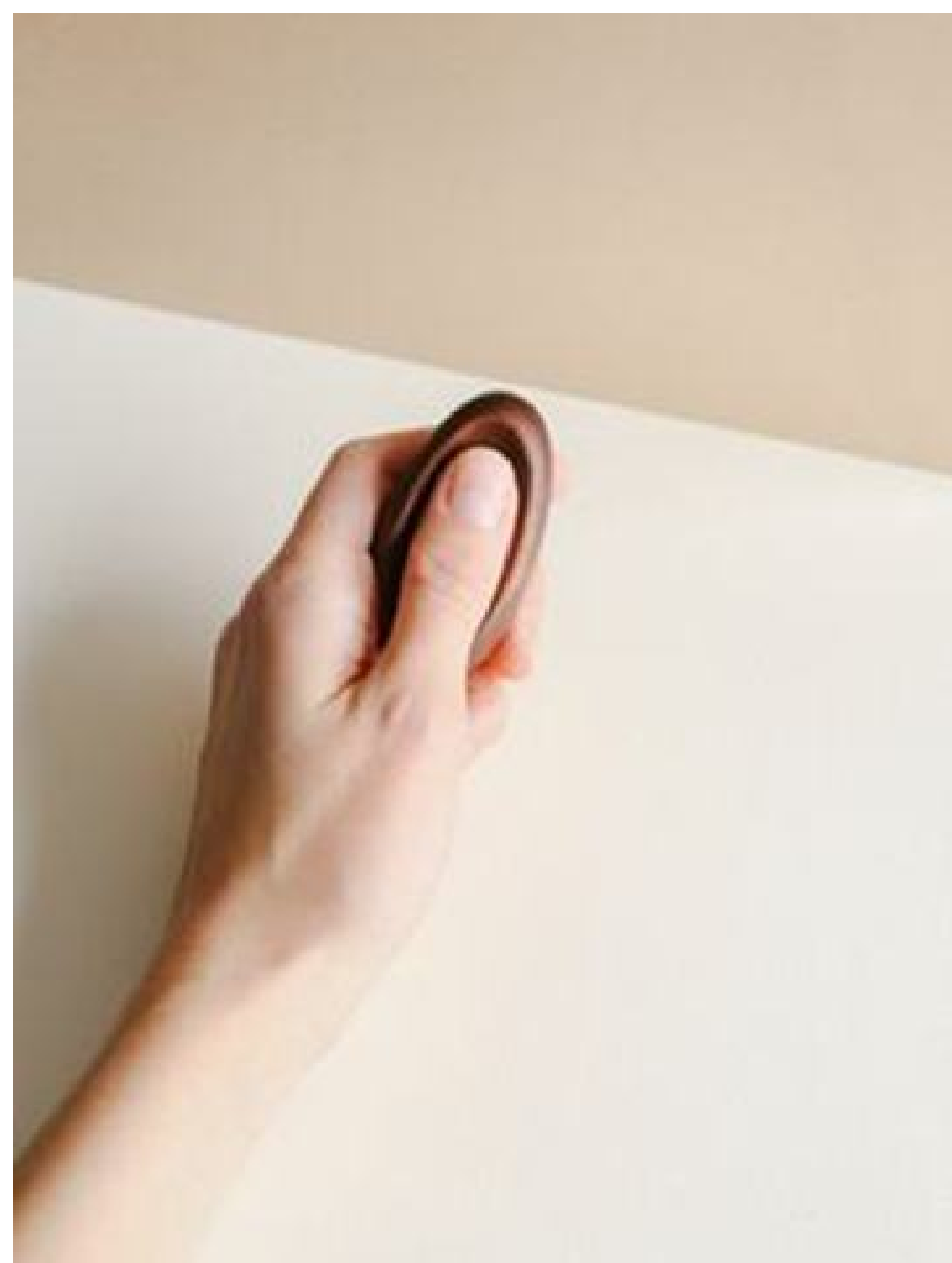
Wooden Desk Clock

Source - Pinterest.com

Fig. 92. Decorative Accessories



8.6. Market Analysis of Mindfulness and Relaxation Accessories



Wooden Fidget



Wooden Aroma Diffuser



Wooden Fidget



Wooden Sand Box



Wooden Yo Yo



Wooden Balancing Puzzle



Wooden Rubik's Cube



Wooden Puzzle

Source - Pinterest.com

Fig. 93. Mindful and Relaxation Accessories



## 9. Observation of Existing Products

Observation of existing products involves examining the design, functionality, and user experience of current offerings in the market. This process helps identify strengths, weaknesses, and opportunities for improvement. Insights gained from observing existing products inform the development of innovative solutions that address unmet needs and enhance the overall user experience.



Shapes are created by simply folding the leather sheet with exposed stitching.



Combination of metal frame and leather with exposed white thread stitching.

*Fig. 94. Executive Desk Accessories made of Leather and Metal*





Shiny copper/brass frame with folded leather.



Combination of metal frame and leather with exposed thread stitching.



Wrapping of leather sheet over metallic frame and cuts at corners and threads creating outline of clock.

*Fig. 95. Executive Desk Accessories made of Leather and Metal*





Shiny copper/brass frame with folded leather.



Combination of metal frame and leather with exposed thread stitching.



Use of wood and similar shape light ring with multipurpose use feature



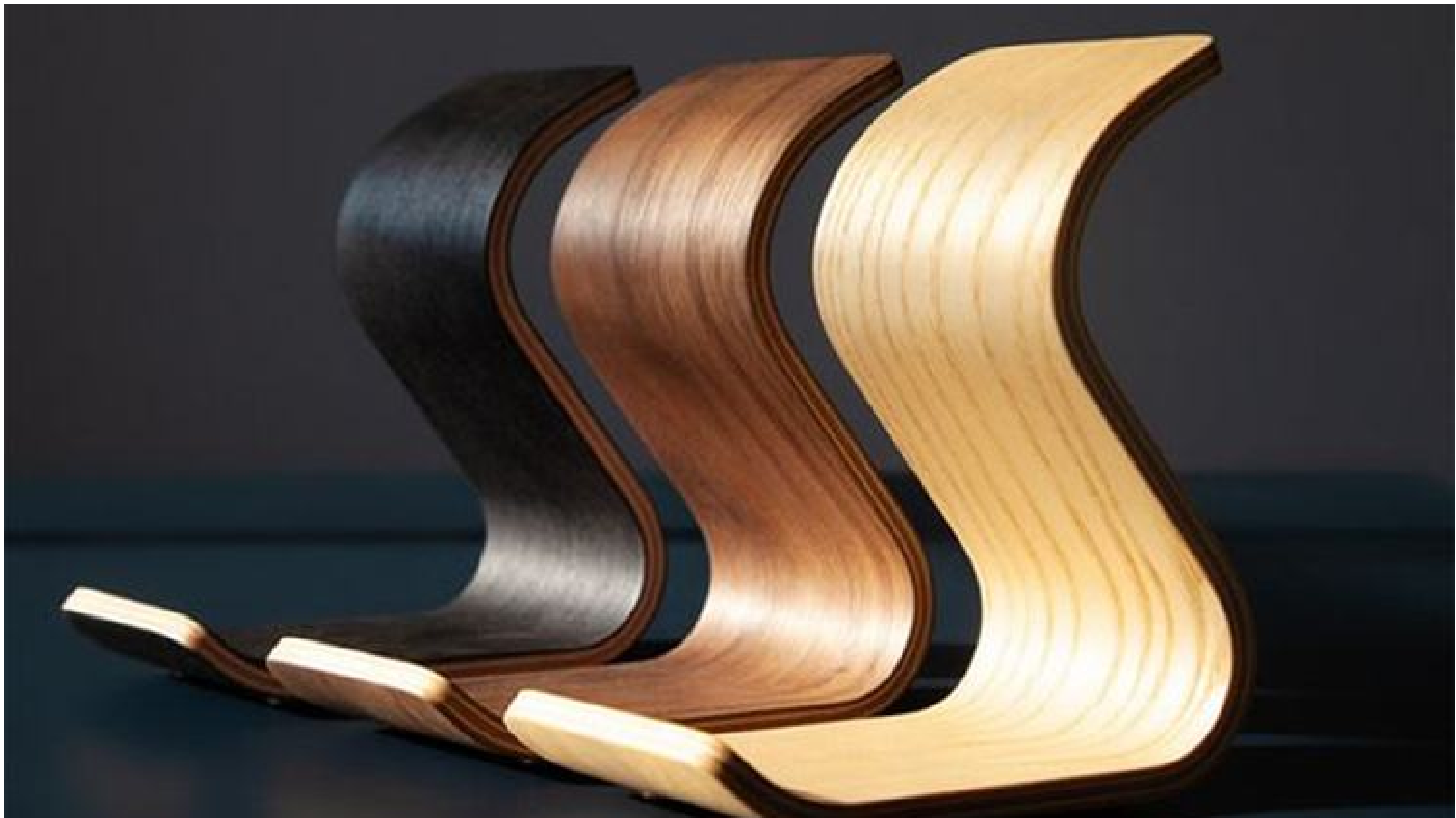
The wooden part housing of the magsafe creates good combination of tech and traditional material.

Fig. 96. Executive Desk Accessories made of Leather, Metal and Wood





Simply designed tray with the metal ball acting as rest.



The texture and patterns of the wood beautify the whole product along with its shape.



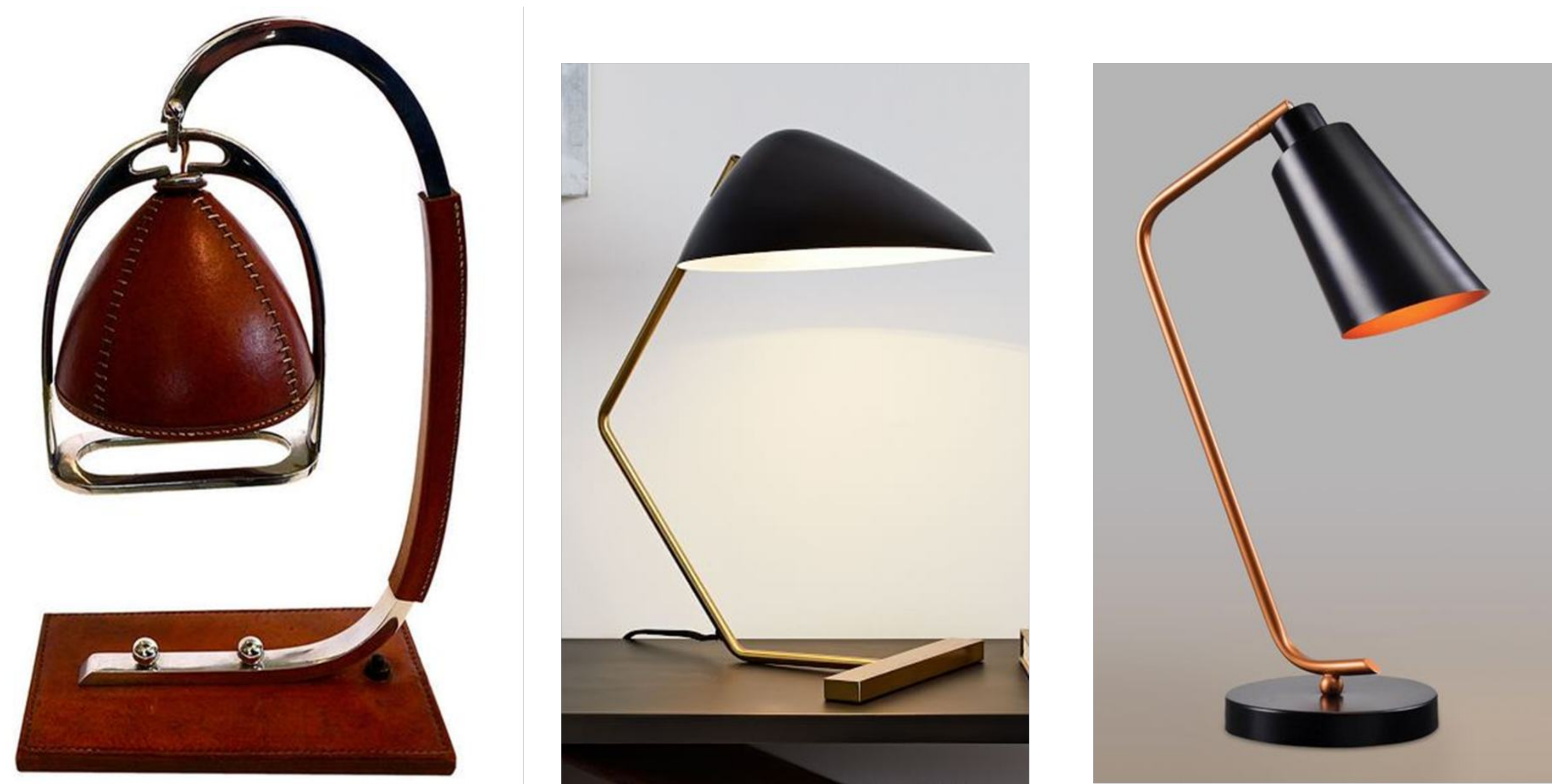
The rectangular shape and longitudinal pattern create a simple and classic set of accessories.

*Fig. 97. Executive Desk Accessories made of Metal and Wood*





Simple yet elegant touch of brown leather.



Combination of leather and metal frame



Metallic legs and black dial complement each other.

*Fig. 98. Executive Desk Accessories made of Metal and Leather*



# 10. Design Attributes

Design attributes refer to the characteristics and qualities that define the appearance, functionality, and usability of a product. These include factors such as aesthetics, ergonomics, durability, and user-friendliness. By carefully considering design attributes, products can be tailored to meet the needs and preferences of users while also ensuring efficiency, effectiveness, and satisfaction in their use.

The following design attributes have been identified through market research and observation of executive spaces and accessories:





## 11. User Persona

A user persona is a fictional representation of a target user group or demographic segment. It is created based on research and data collected about the characteristics, preferences, needs, and behaviors of actual users. User personas help designers and marketers better understand their target audience and make informed decisions about product development, marketing strategies, and user experience design. They typically include details such as demographic information, goals, challenges, preferences, and pain points, allowing teams to empathize with users and tailor their efforts to meet their needs effectively.

The user persona was developed by aligning the identified design attributes with the needs, preferences, and behaviors of the target audience. Through extensive market research and observation of executive spaces and accessories, key insights were gathered regarding the requirements of executives in their workspace. By analyzing the aesthetic preferences, functional requirements, durability expectations, ergonomic needs, and customization desires of executives, a detailed user persona was framed. This persona serves as a representative archetype, guiding the design process to ensure that the resulting executive desk accessories effectively meet the specific needs and preferences of the target users.



*Fig. 99. Persona Images*



# Mrs. Ananya Rao

Age: 45 years

Position: District Collector, Jaipur, Rajasthan.

Work Environment: Operates from a heritage government office in Jaipur, known for its cultural richness.

Workload: Manages administrative affairs, oversees public services, and liaises with local government departments.

Communication: Engages with citizens, and community leaders, and works closely with local NGOs.

Cultural Connection: Embraces accessories that celebrate and reflect the rich cultural heritage of Rajasthan.

Community Engagement: Values accessories that facilitate communication with the local community.

Technology Integration: Embraces technology for improved governance and citizen services.

Symbol of Pride: Takes pride in her administrative jurisdiction.

Hospitality and Tea Breaks: Appreciates hospitality and tea breaks



Fig. 100. Mrs. Ananya Rao



# Mr. Arjun Mehra

Age: 50 years

Position: Principal Secretary to the Chief Minister

Work Environment: Mumbai, India – Manages a dynamic and high-pressure office in the state administrative headquarters.

Workload: Balances administrative responsibilities, policy implementation, and coordination with various government departments.

Communication: Engages in high-level meetings with political leaders, stakeholders, and international delegations.

Cultural Connection: Values accessories reflecting Indian culture.

Organization: Requires accessories for a clutter-free and organized workspace.

Technology Uses: Relies heavily on digital devices for communication, research, and policy analysis

Sustainability : Prefers eco-friendly office accessories

Inspiration: Enjoys inspirational elements in the workspace.



Fig. 101. Mr. Arjun Mehra



## 12. Mood Board

A mood board is a visual tool used in the early stages of design to capture and convey the overall aesthetic, theme, and mood of a project. It typically consists of a collage of images, textures, colors, patterns, and typography gathered from various sources such as magazines, websites, and photographs. Mood boards help designers and stakeholders visualize and communicate ideas, inspirations, and design concepts, serving as a reference point throughout the creative process. They play a crucial role in establishing a cohesive visual direction, fostering collaboration, and ensuring that the final design aligns with the desired look and feel.

The mood board was crafted by curating images, textures, and colors, inspired by the attribute keywords derived from the comprehensive market study and observation. Each element chosen for the mood board reflects the essence of these attributes, capturing the desired aesthetic, functionality, and user experience envisioned for the executive desk accessories. By visually articulating the design direction and mood, the mood board serves as a valuable reference tool to guide and inspire the creative process towards creating accessories that resonate with the target audience.





Fig. 102. Moodboard depicting attribute "Status"





Fig. 103. Moodboard depicting attribute "Power"



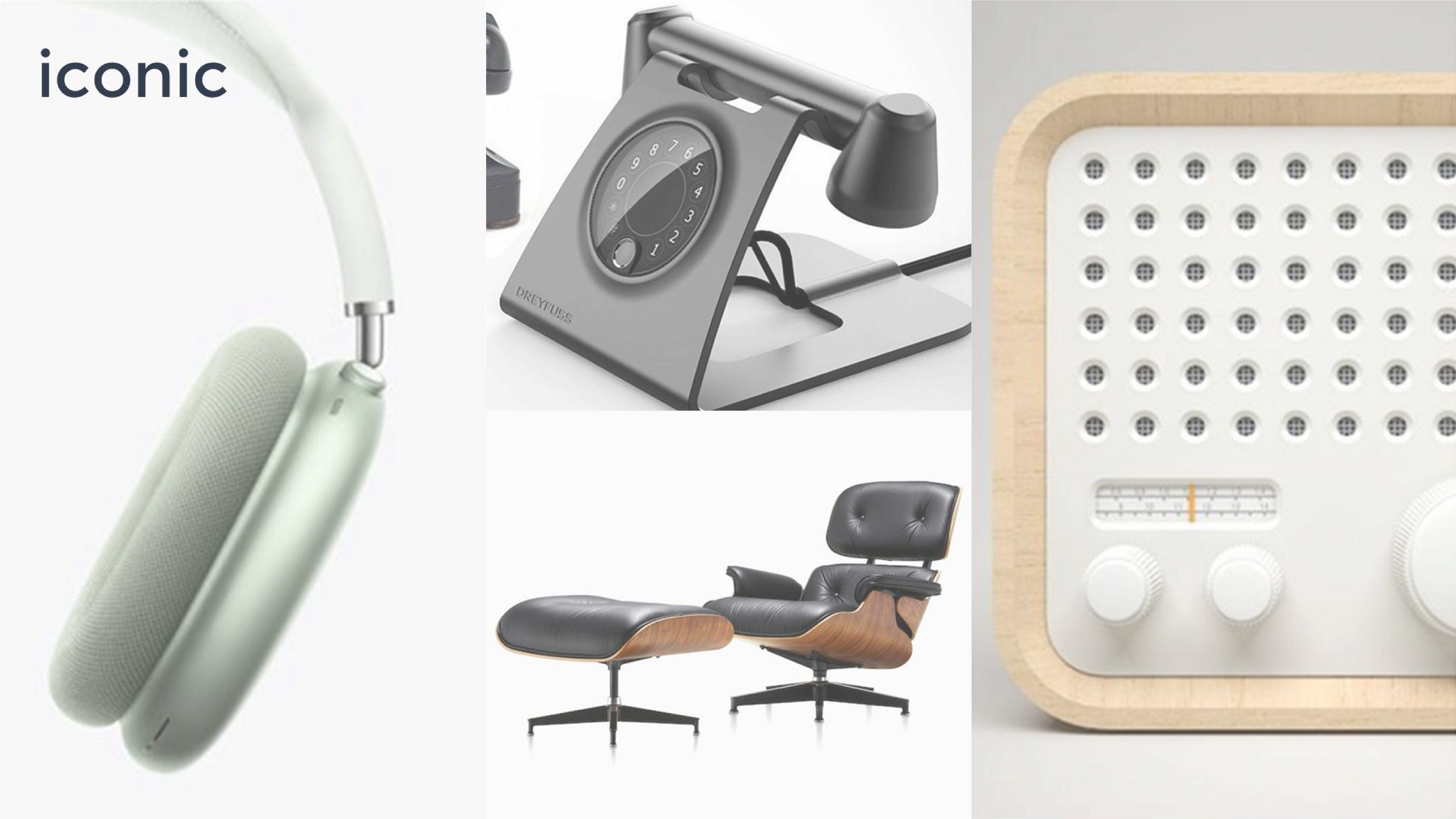


Fig. 104. Moodboard depicting attribute "Iconic"





Fig. 105. Moodboard depicting attribute "Privilege"



## 13. Design Brief

The design brief serves as a blueprint for the entire design process, outlining the objectives, constraints, and requirements of the project. It is framed by synthesizing insights gathered from market research, observation, and user persona development. The design brief typically includes key elements such as project goals, target audience, design attributes, deliverables, timeline, and budget. By clearly defining the scope and expectations of the project, the design brief provides a roadmap for designers and stakeholders, guiding decision-making and ensuring alignment throughout the design process.

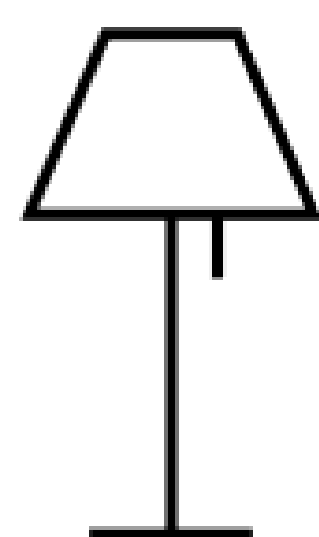
### Design Brief

To design an iconic **bamboo desk accessories set** for **executive offices**, showcasing **premium quality** and **status**. Emphasize **elegance** and **power**, reflecting the **executive's persona**. A cohesive set of accessories that display **sophistication** and **prestige**, aligning with **eco-conscious** trends while prioritizing the balance of **functionality** and **aesthetics**.



# 14. Defining Set of Accessories

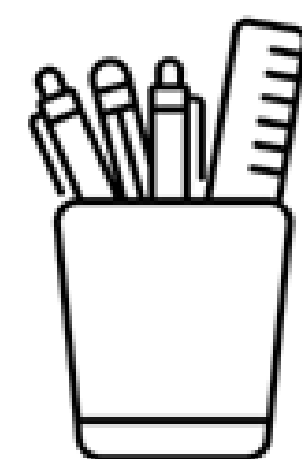
The set of accessories was defined through a comprehensive analysis of the market study and identification of products in demand. By examining trends, consumer preferences, and competitive offerings in the executive desk accessories market, key insights were gathered regarding the types of accessories that are most sought after by executives. Additionally, observing the usage patterns and needs of executives in their workspace provided valuable input for defining the essential accessories required to enhance productivity, organization, and aesthetics. Through this process, a curated set of accessories was determined based on market demand, user preferences, and the perceived value they bring to the executive workspace.



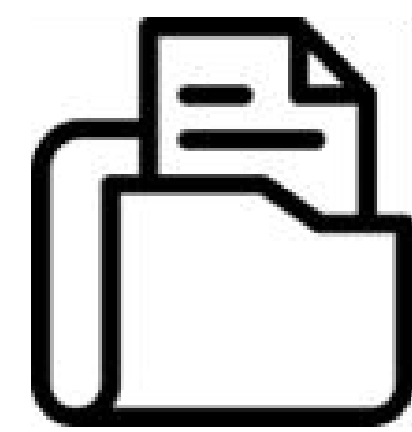
Desk Lamp



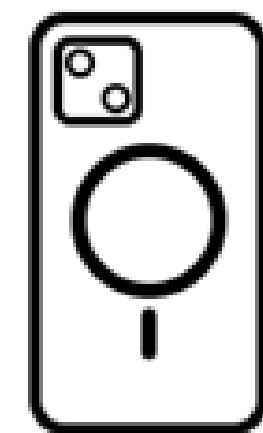
Desk Clock



Pen Holder



File Holder



Mag Safe Dock

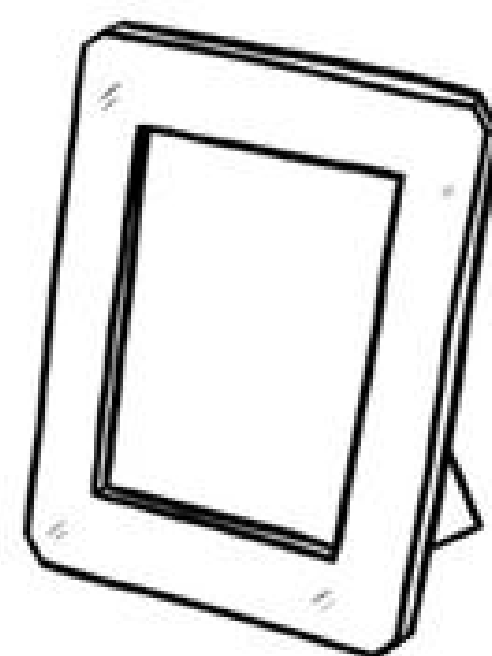
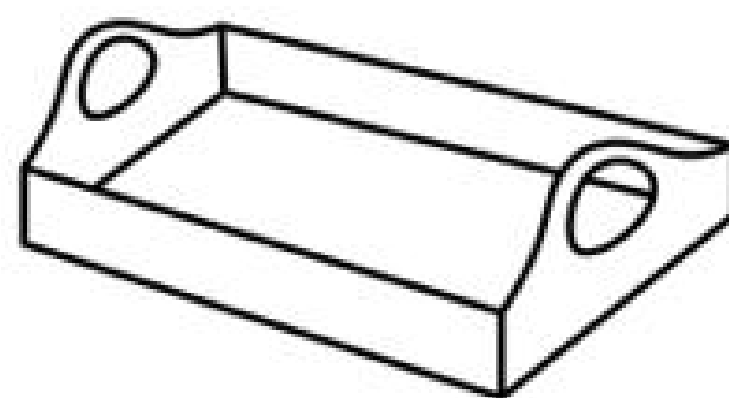
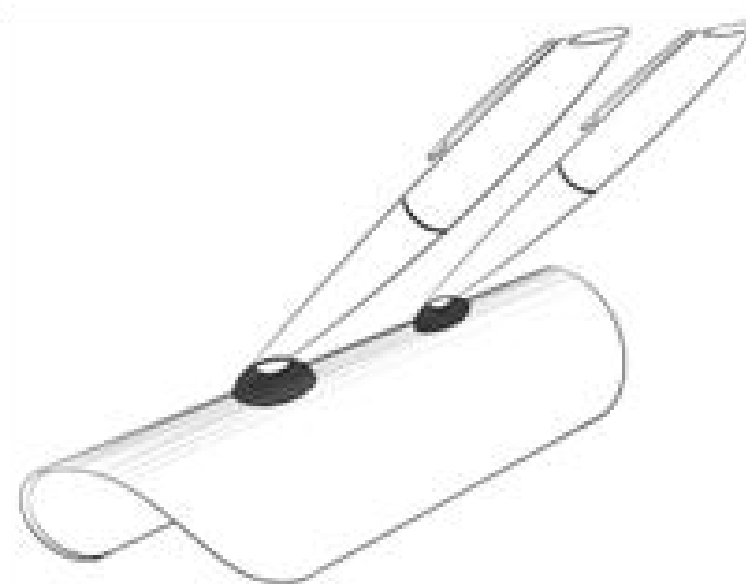


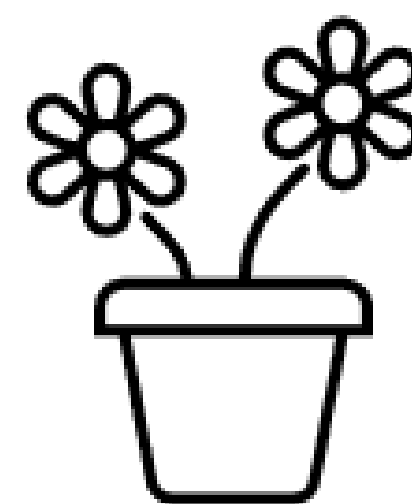
Photo Frame



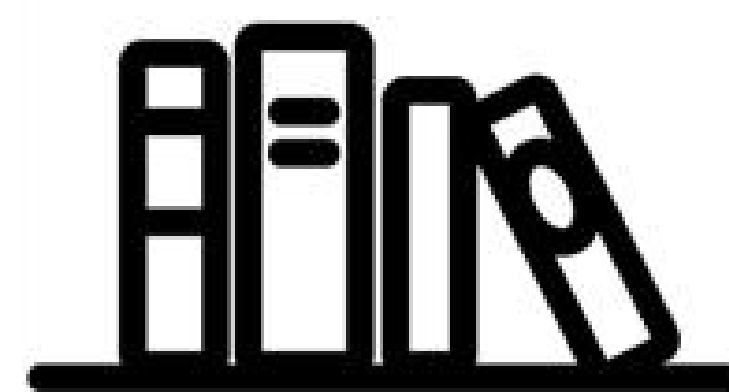
Accessories Tray



Executive Pen Stand



Desktop Planter



Book Display Stand



## 15. Ideations

The initial ideation process involved brainstorming sessions and sketching out concepts to explore various ideas and possibilities. AI visualization tools were utilized to translate these initial sketches into digital renderings, providing a clearer visualization of the design concepts.

Following this, feasibility studies were conducted to evaluate the viability of implementing these ideas using bamboo as the primary material. Factors such as bamboo's properties, availability, manufacturing processes, and sustainability considerations were assessed to ensure that the proposed designs could be successfully executed with bamboo while meeting the desired standards of functionality, durability, and aesthetics.



Fig. 106. AI visualization of ideation sketches



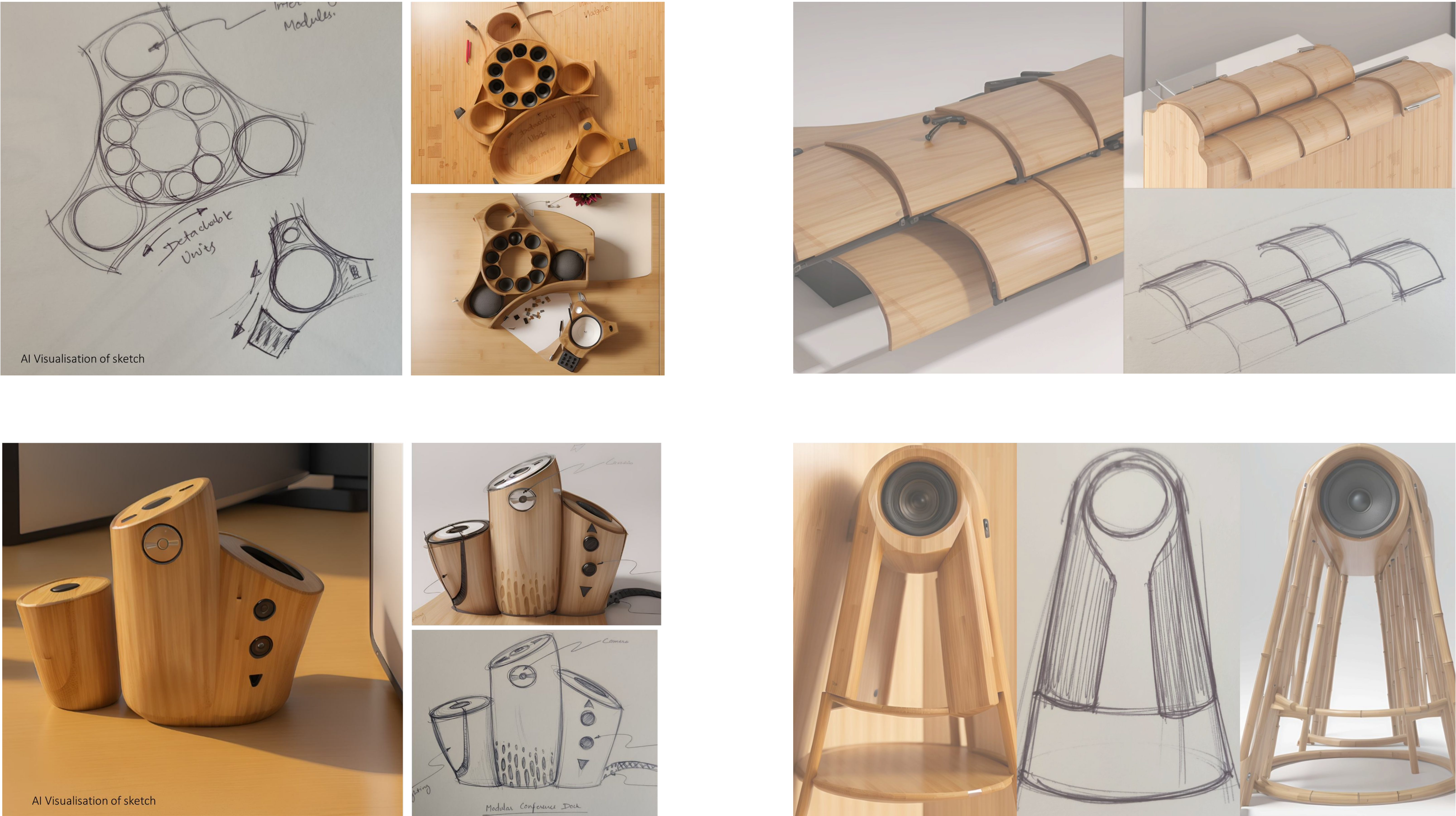


Fig. 107. AI visualization of ideation sketches





Fig. 108. AI visualization of ideation sketches



## 16. Early Stage Paper Mockups

Early-stage paper mockups were created to explore and iterate on initial ideations in a tangible and hands-on manner. Basic materials such as paper, cardboard, and other easily manipulable materials to craft rough prototypes of the proposed desk accessories. These mockups allowed to quickly visualize and test different design concepts, dimensions, and functionalities.



*Fig. 109. Paper mockups of initial ideations*



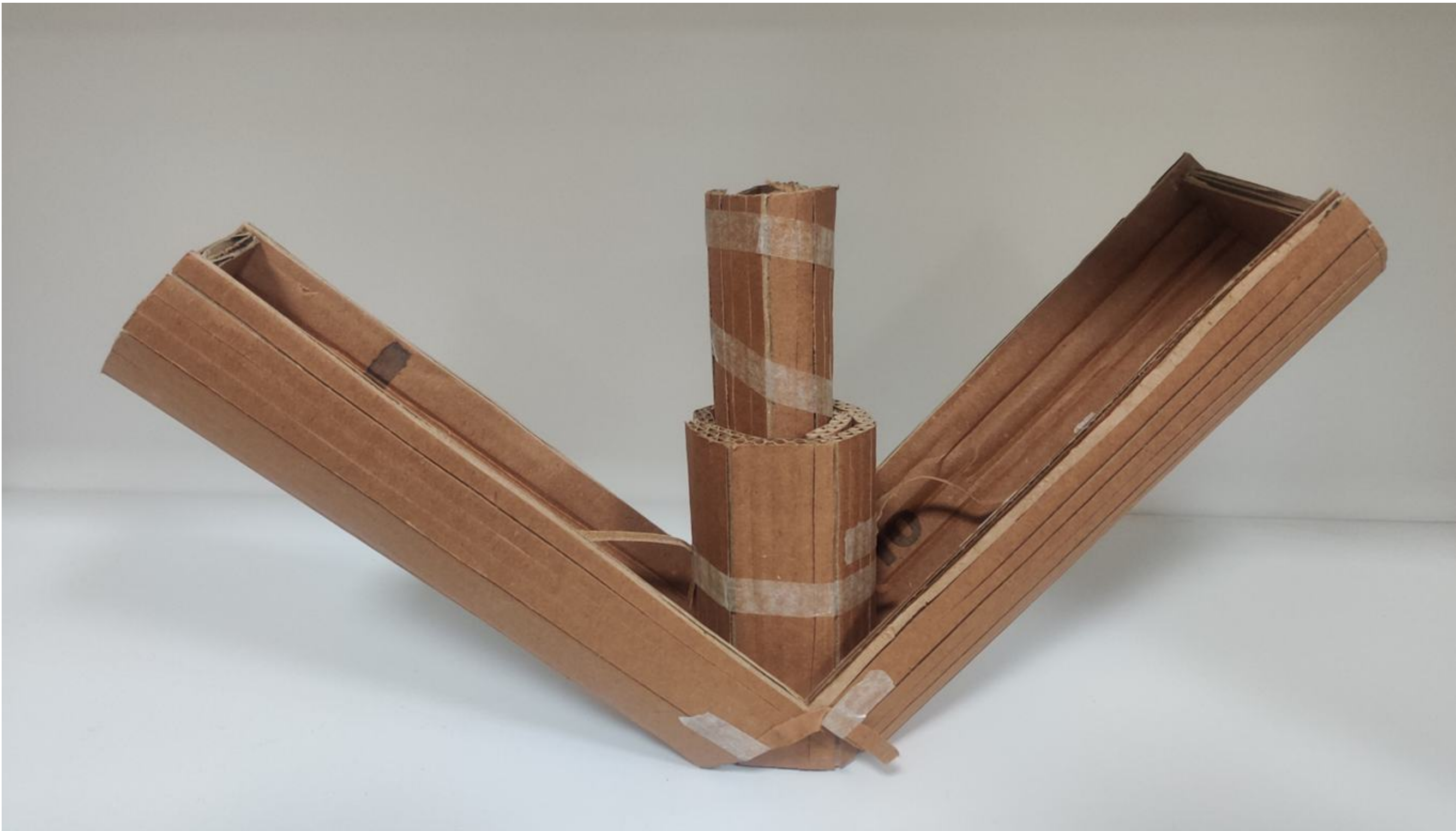
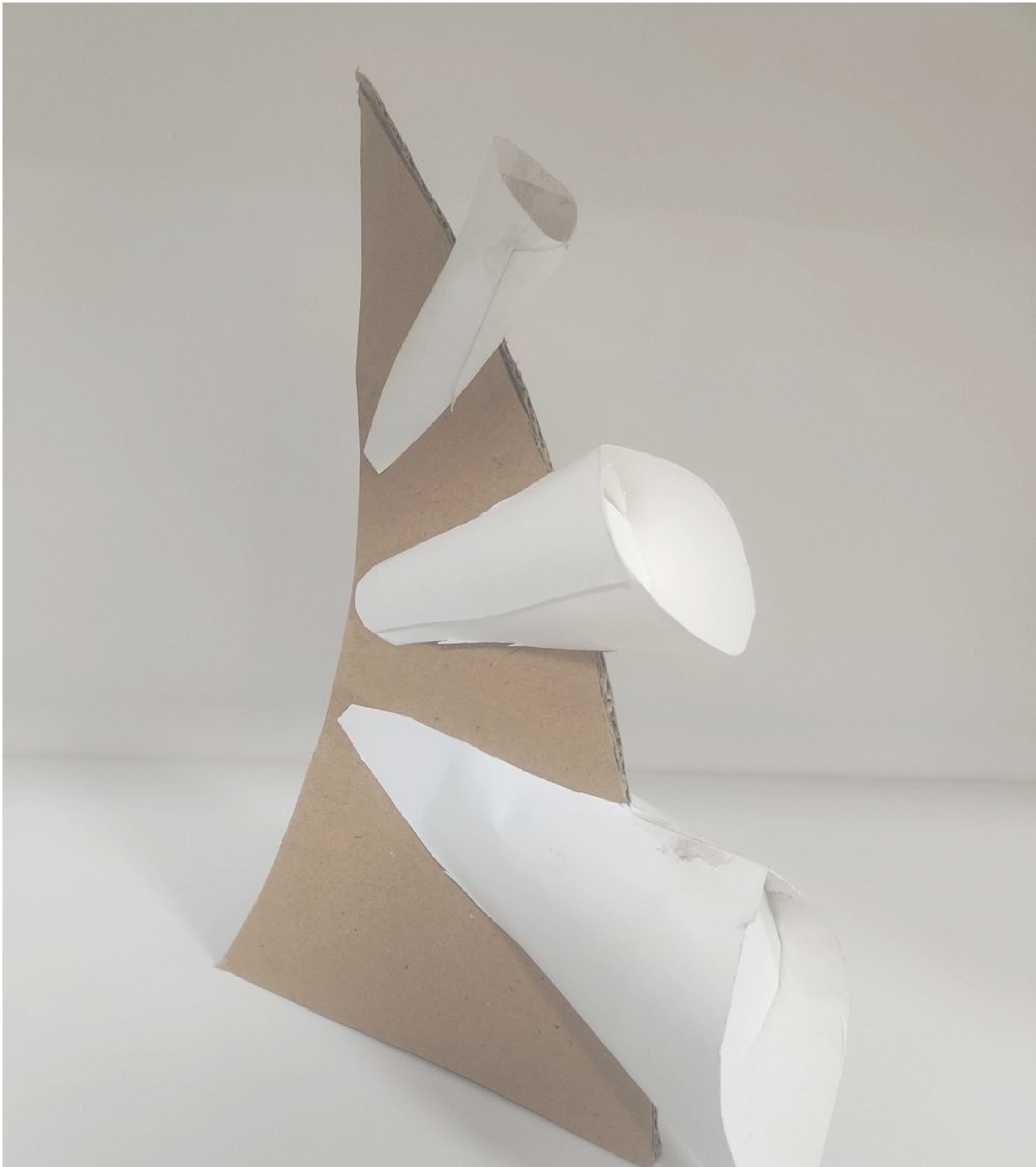


Fig. 110. Paper mockups of initial ideations



# 17. Concepts

## Woven Strips & Bamboo

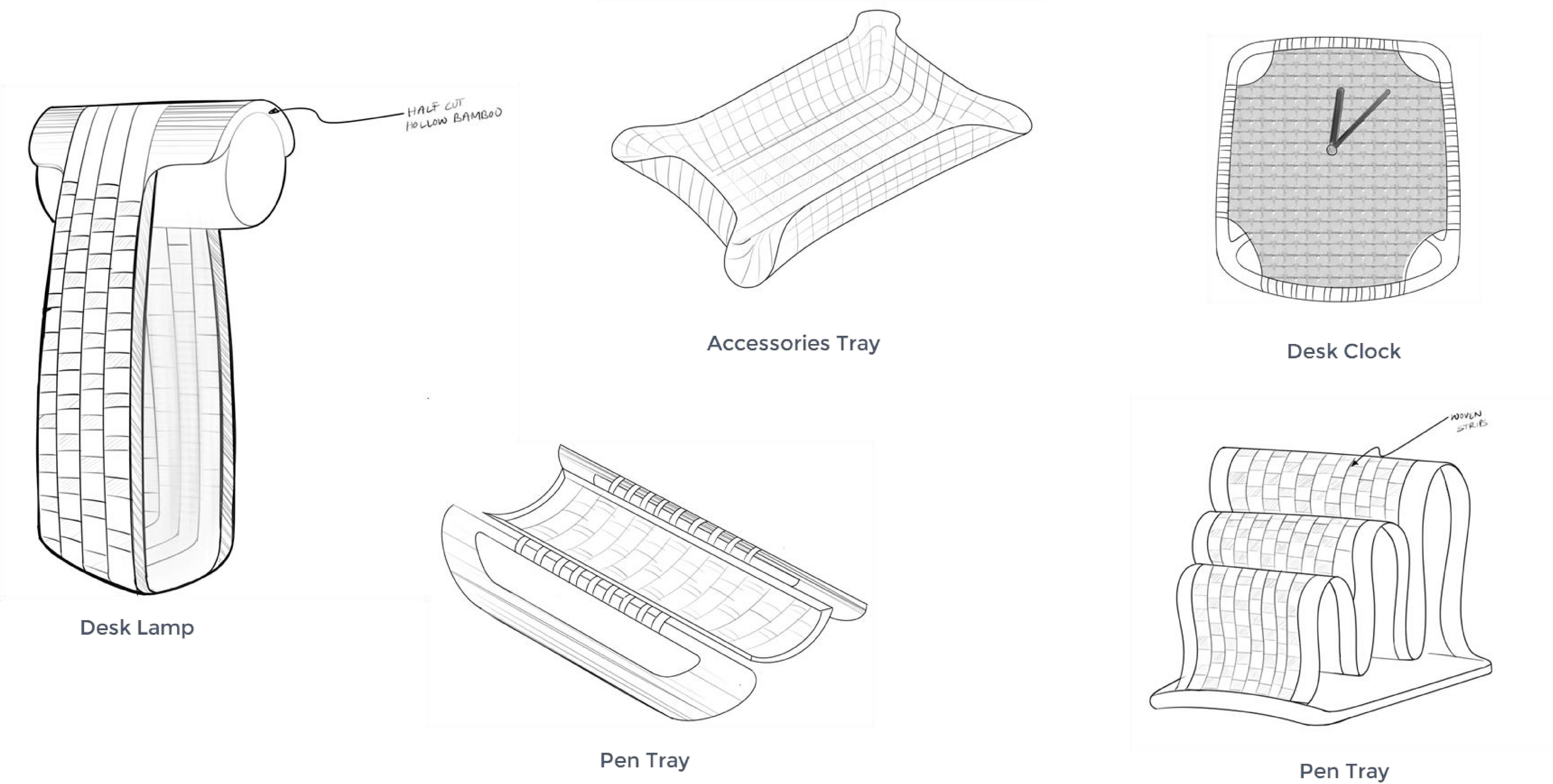
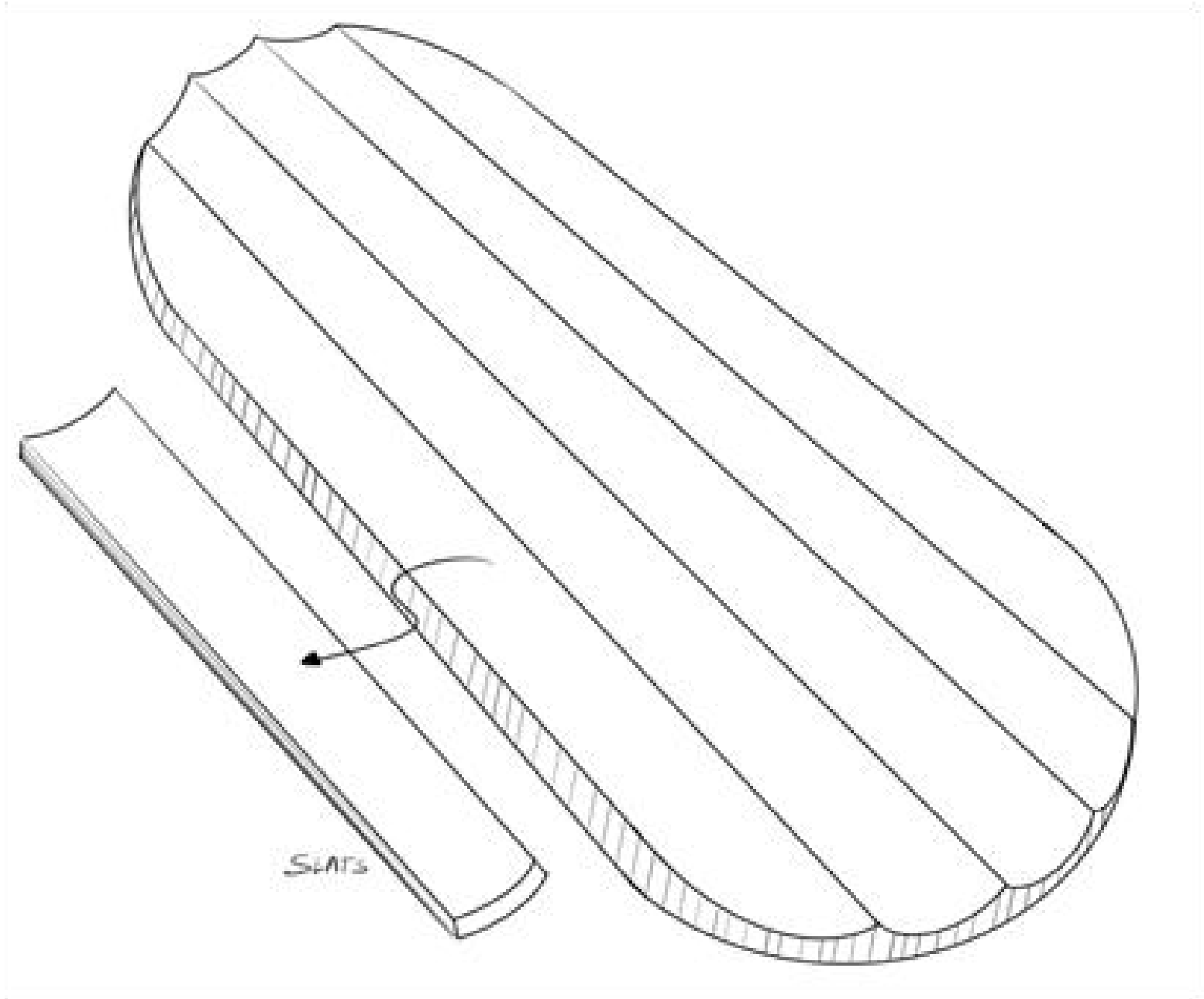
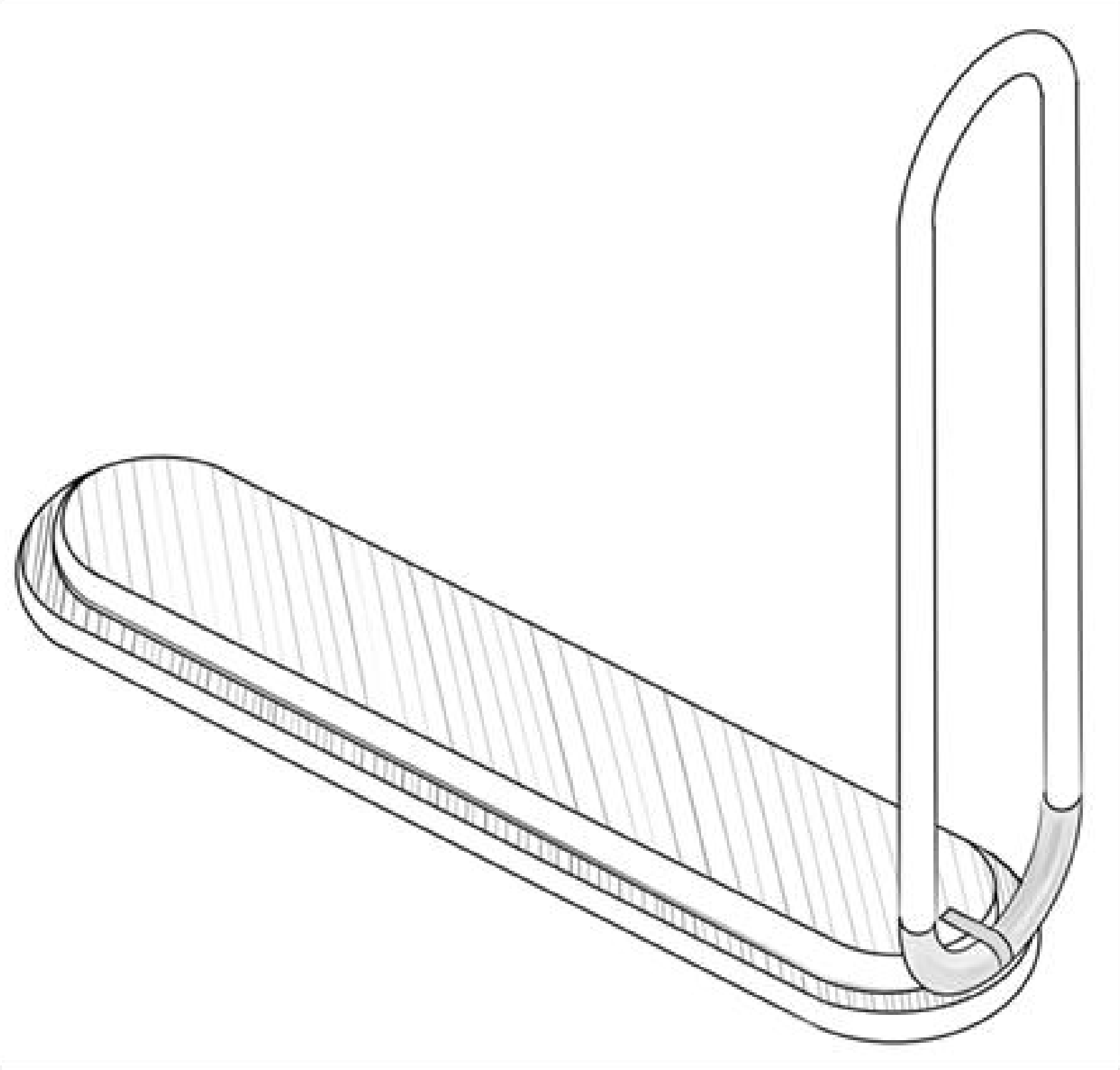


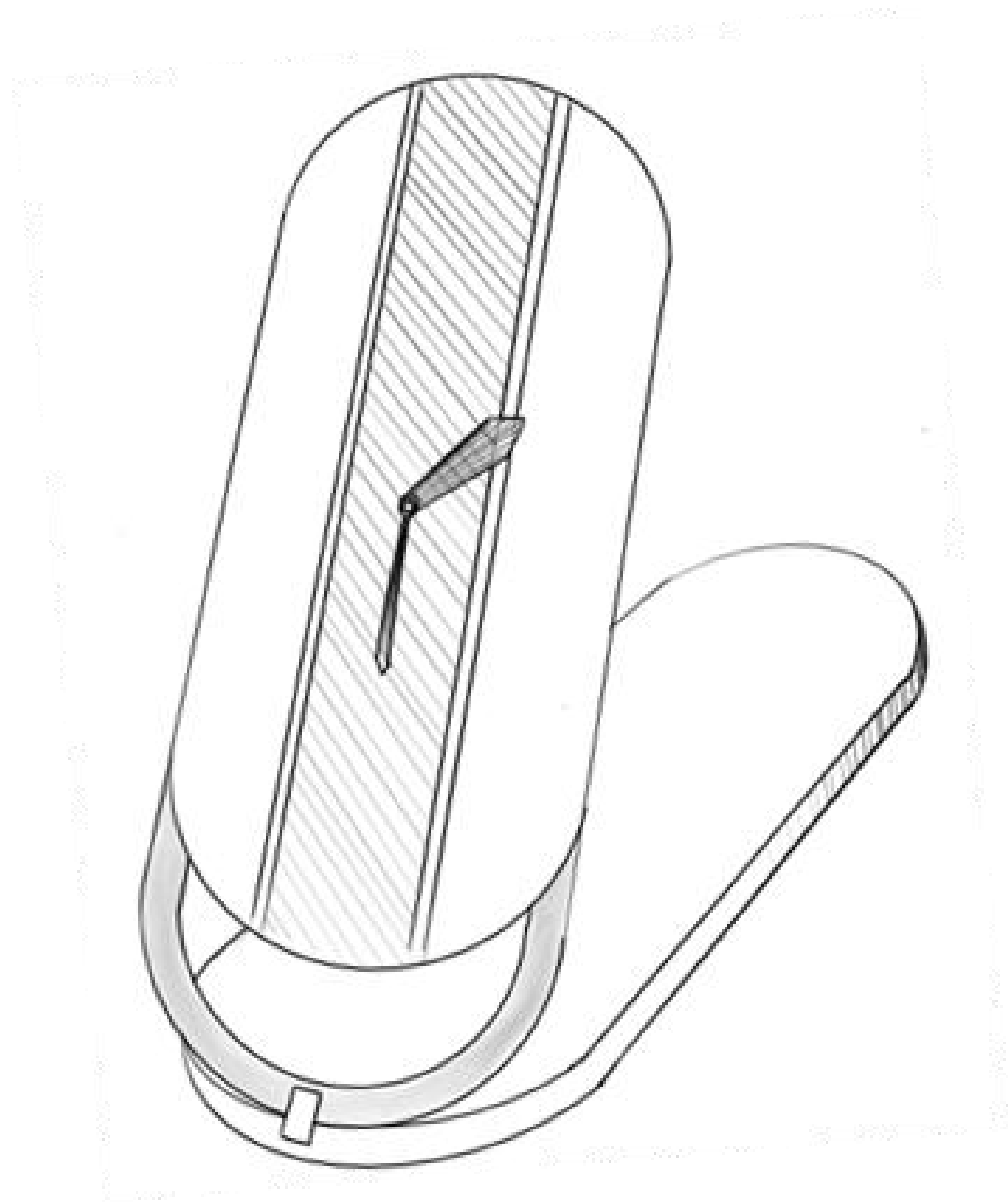
Fig. 111. Concept sketches of Desk Accessories using Bamboo Strips



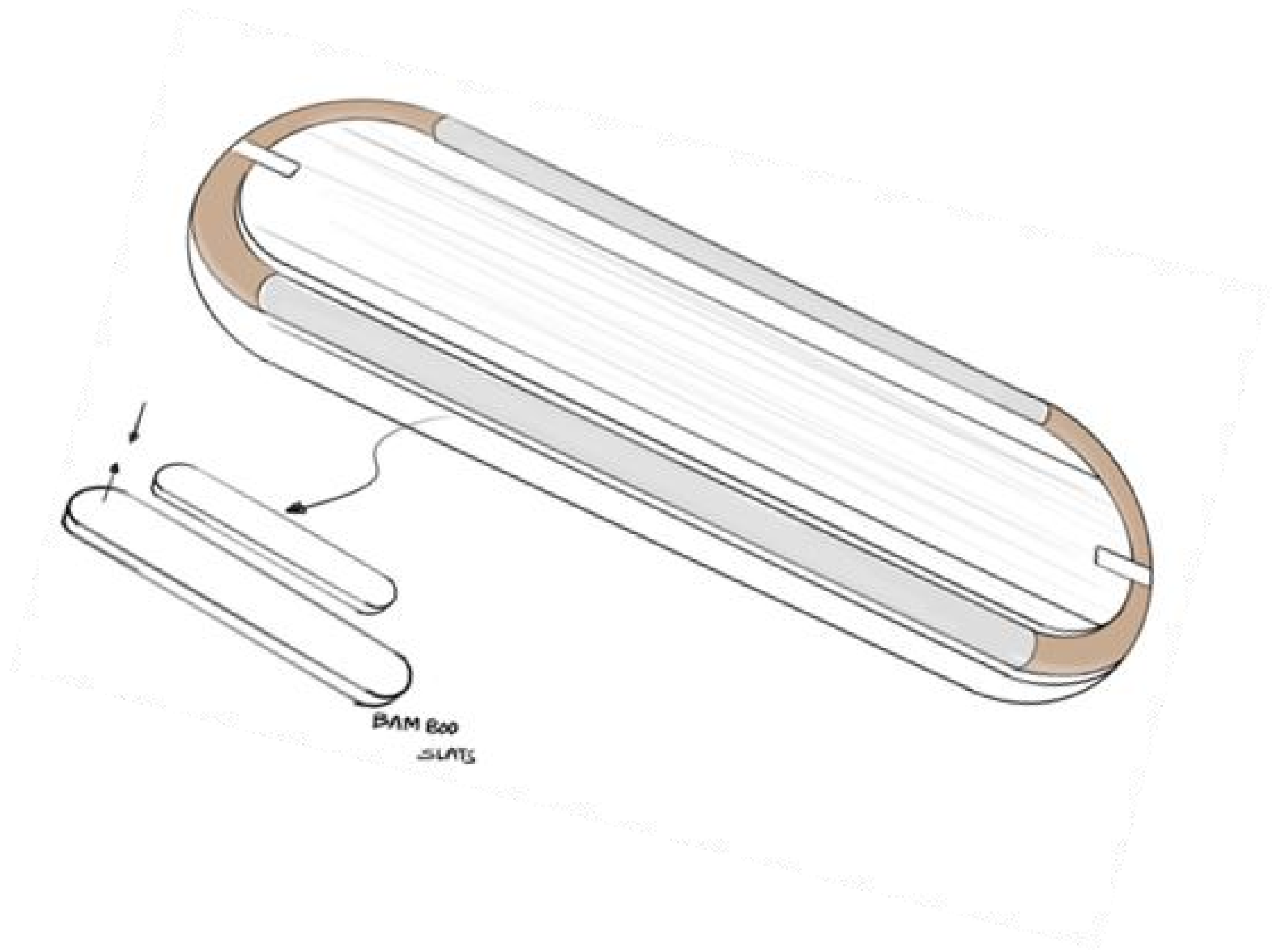
Bamboo Slats



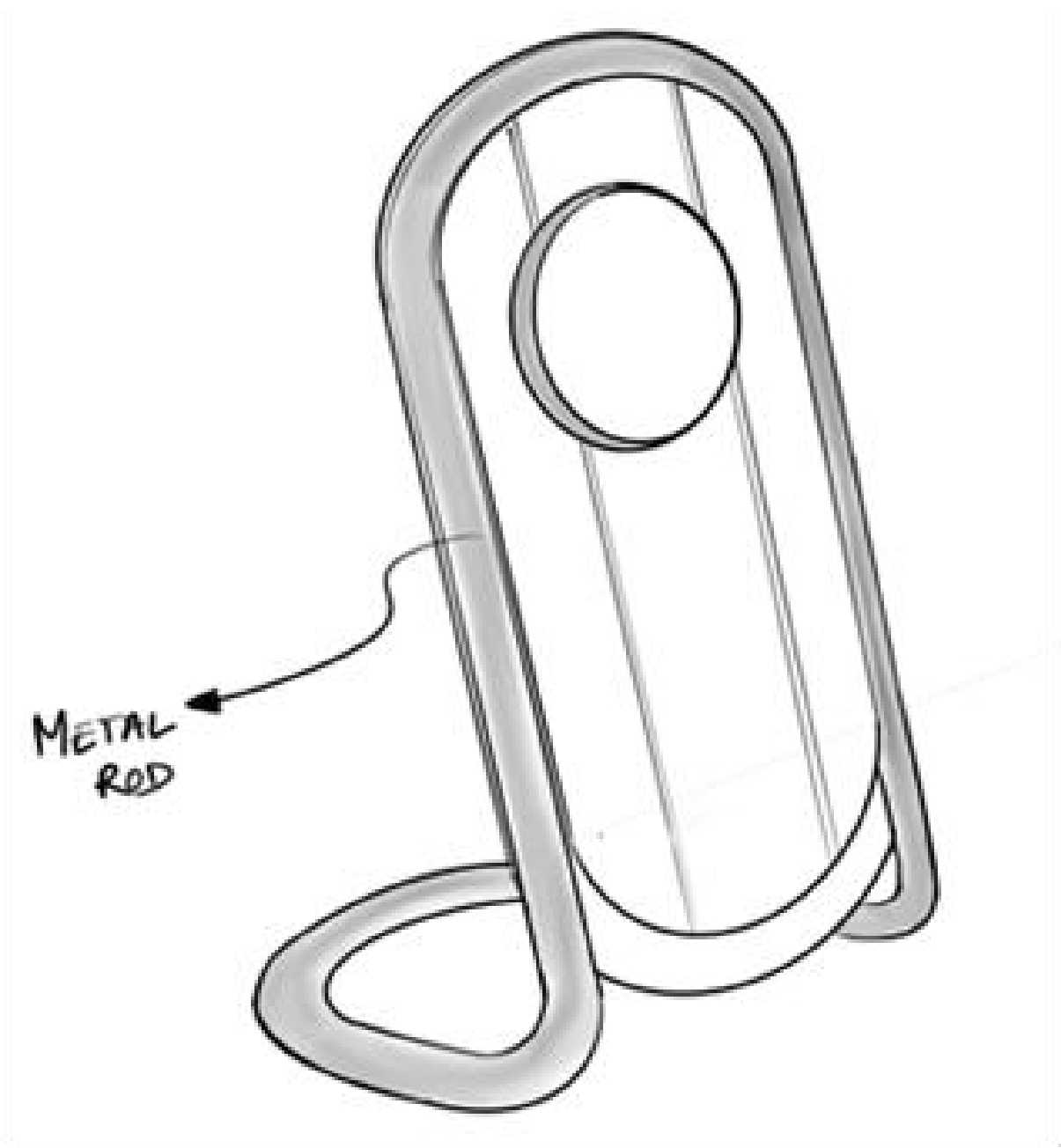
Accessories Tray



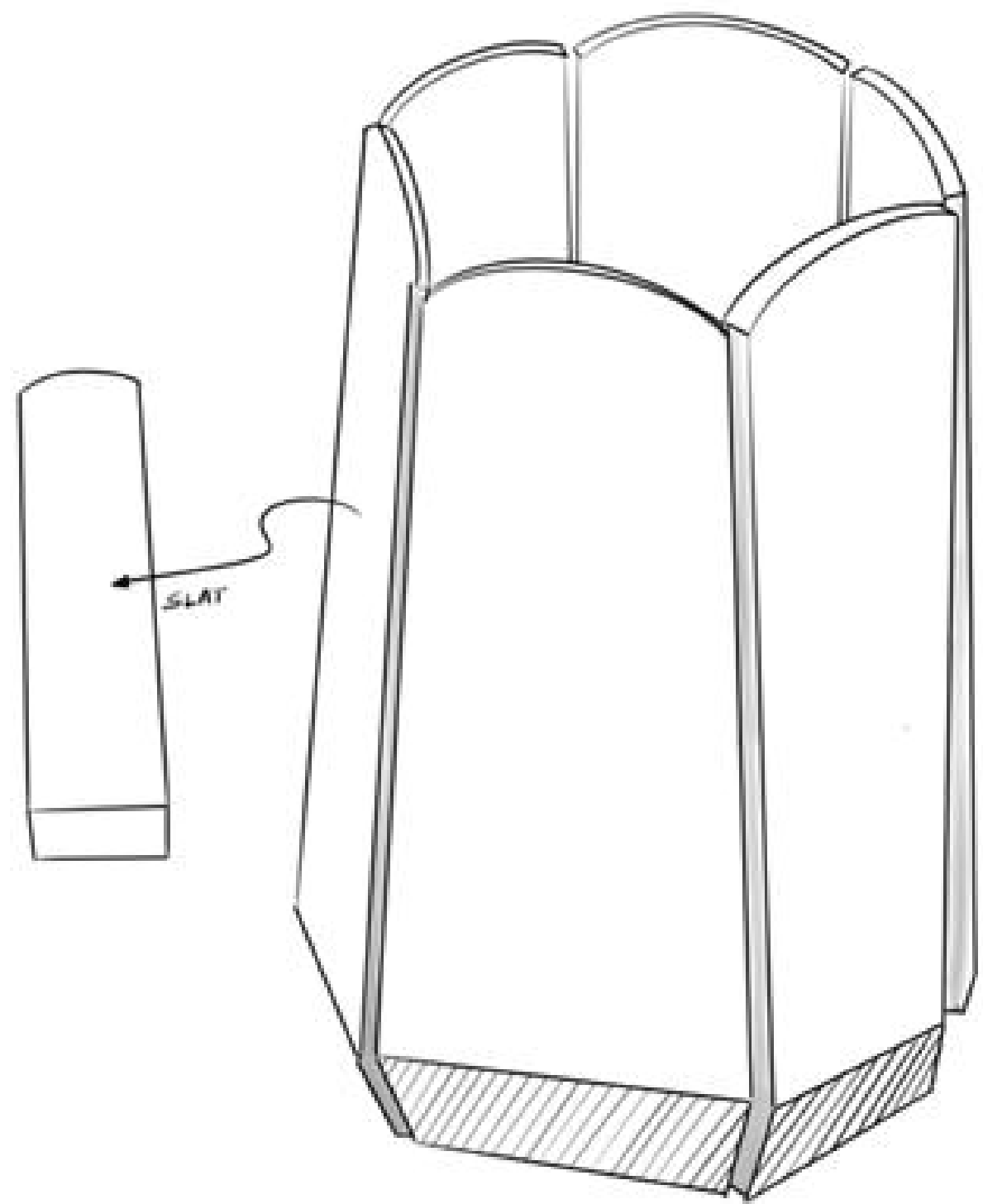
Desk Clock



Foldable Desk Lamp



MagSafe Dock



Pen Stand

Fig. 112. Concept sketches of Desk Accessories using Bamboo Slats



# Solid Bamboo

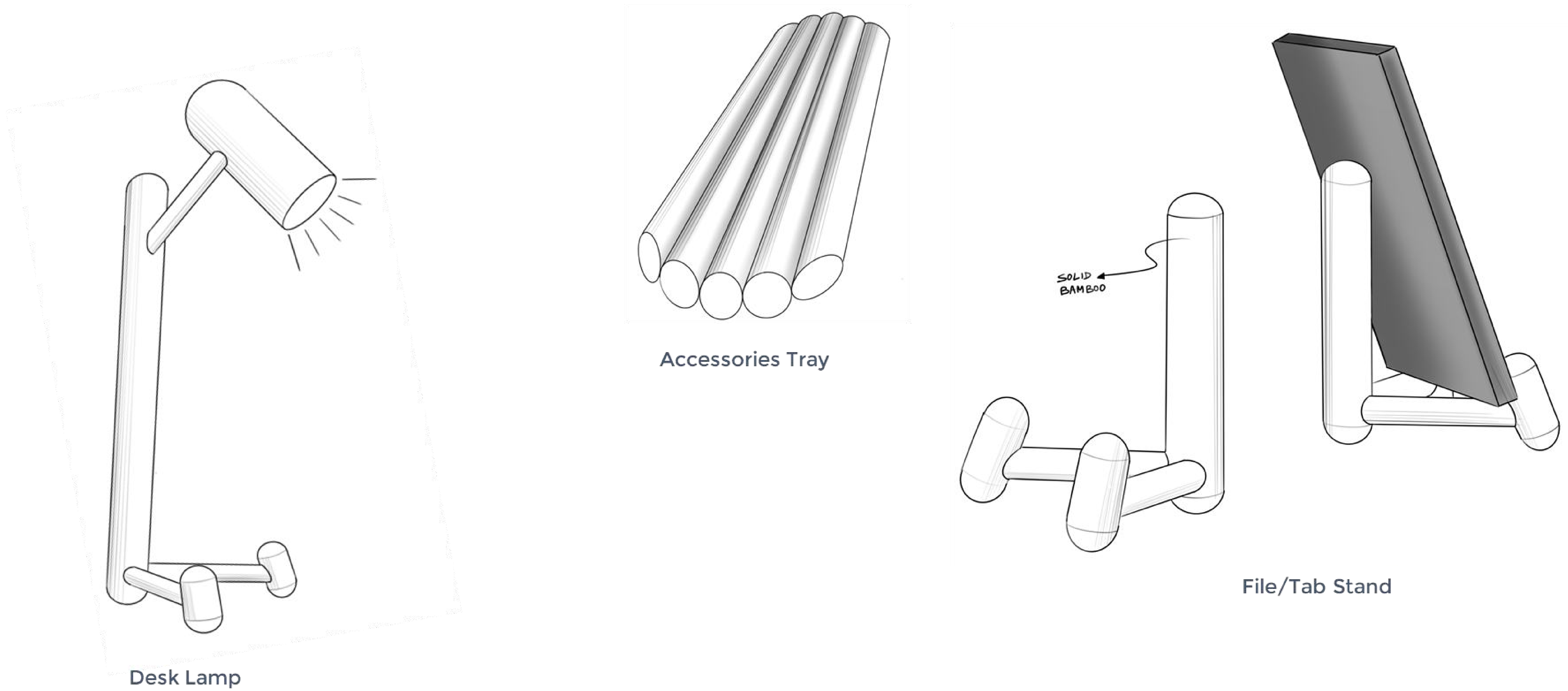


Fig. 113. Concept sketches of Desk Accessories using Solid Bamboo



Half Cut Bamboo

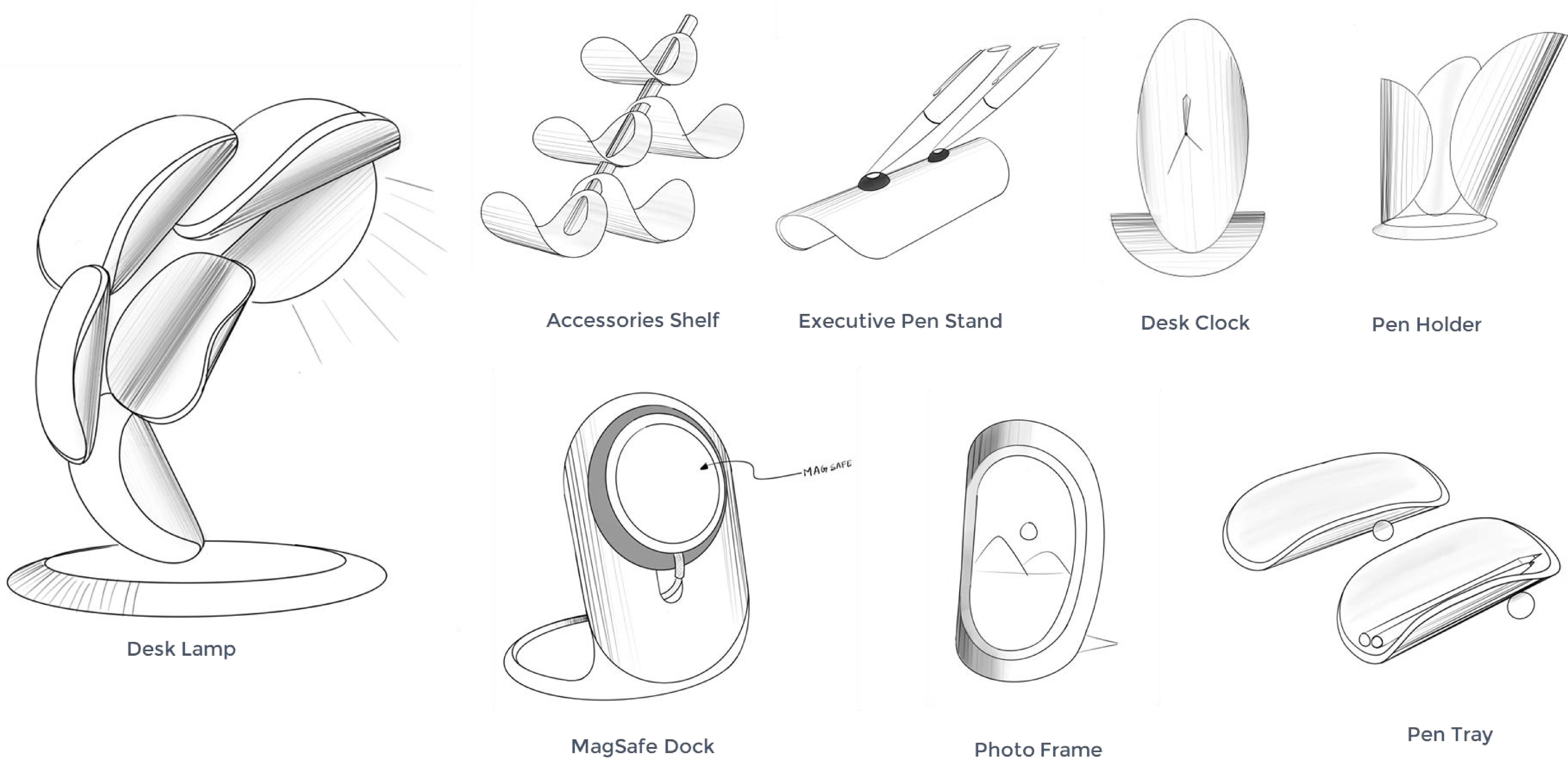
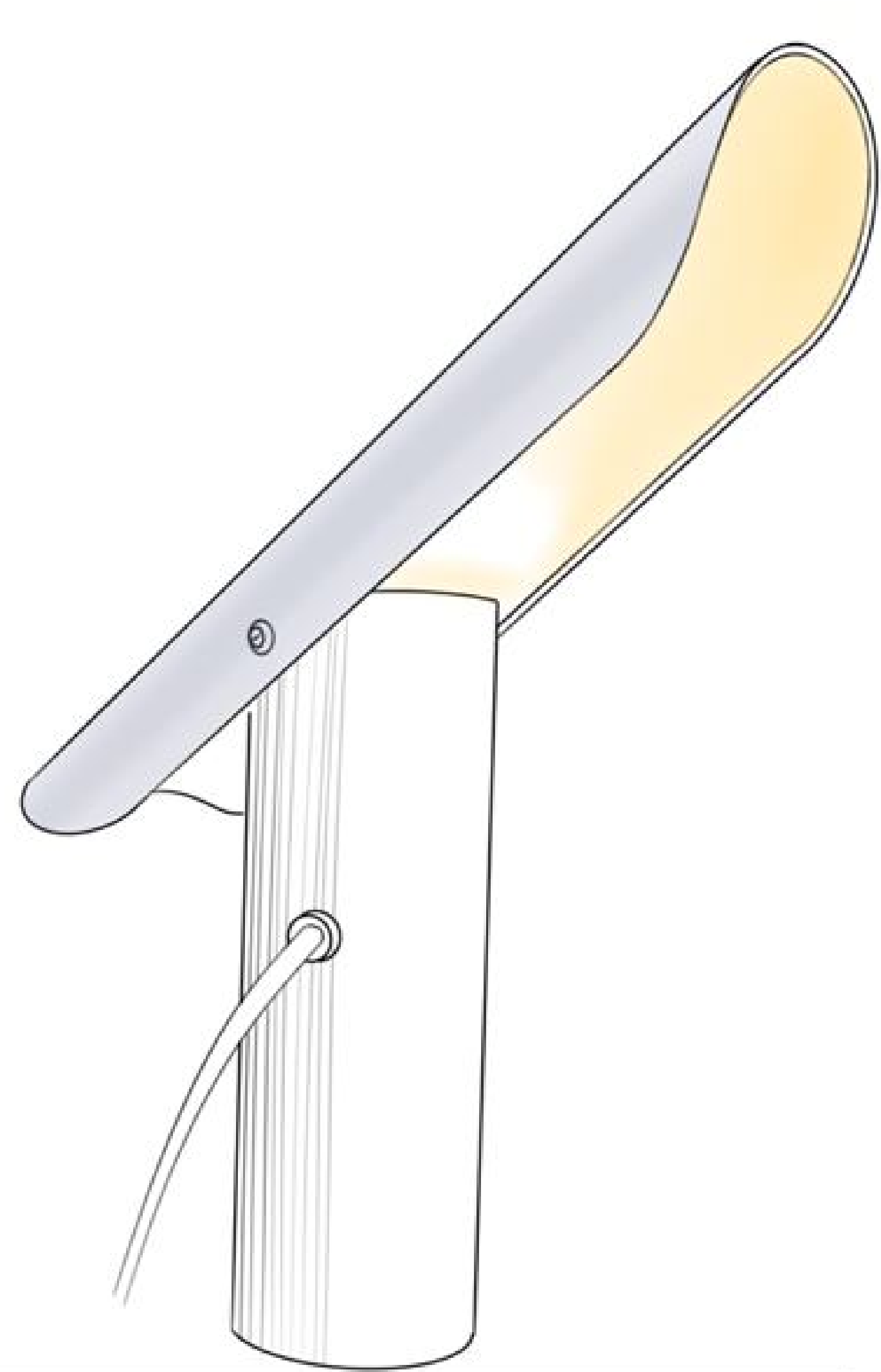


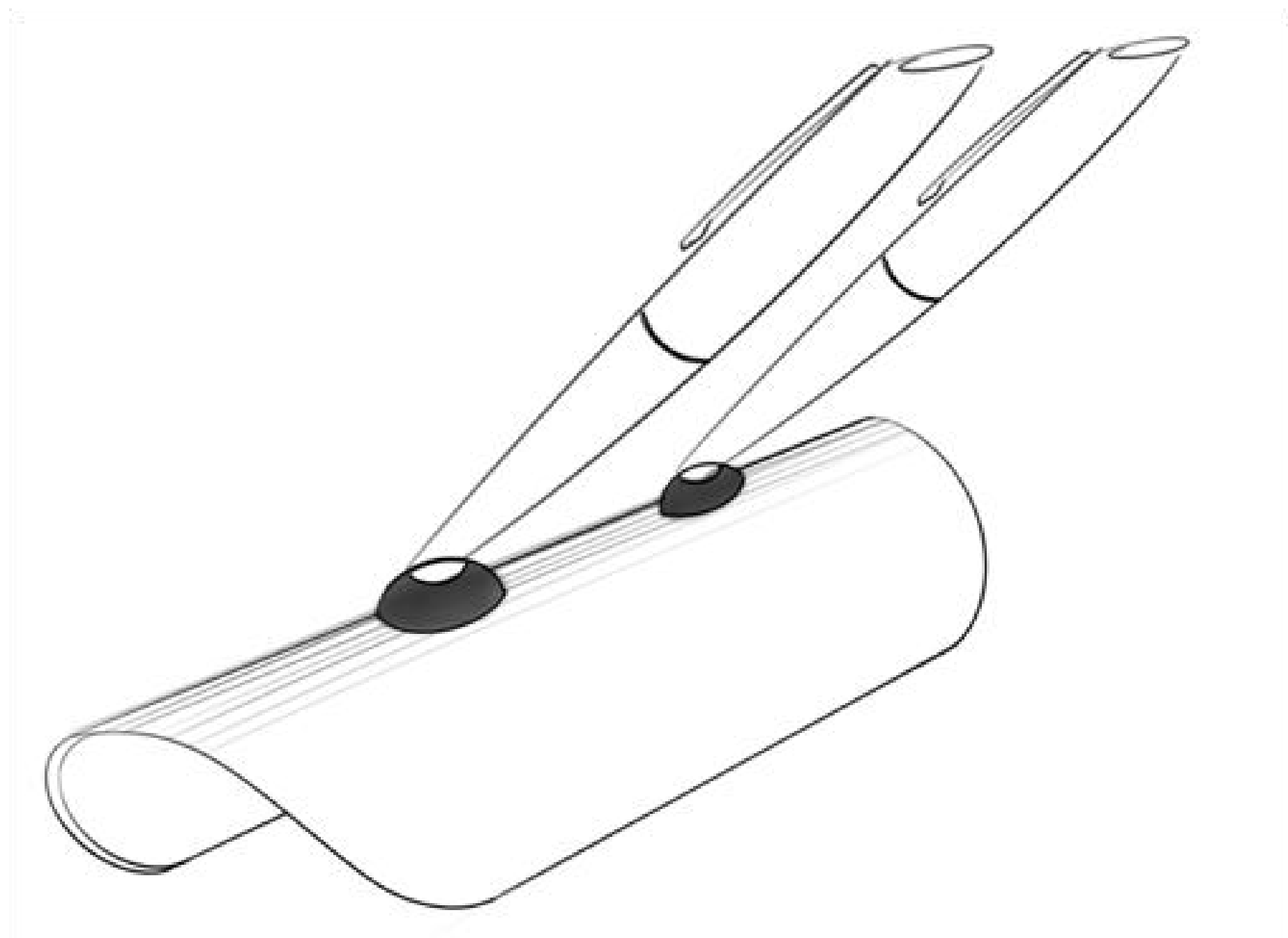
Fig. 114. Concept sketches of Desk Accessories using Half Cut Bamboo



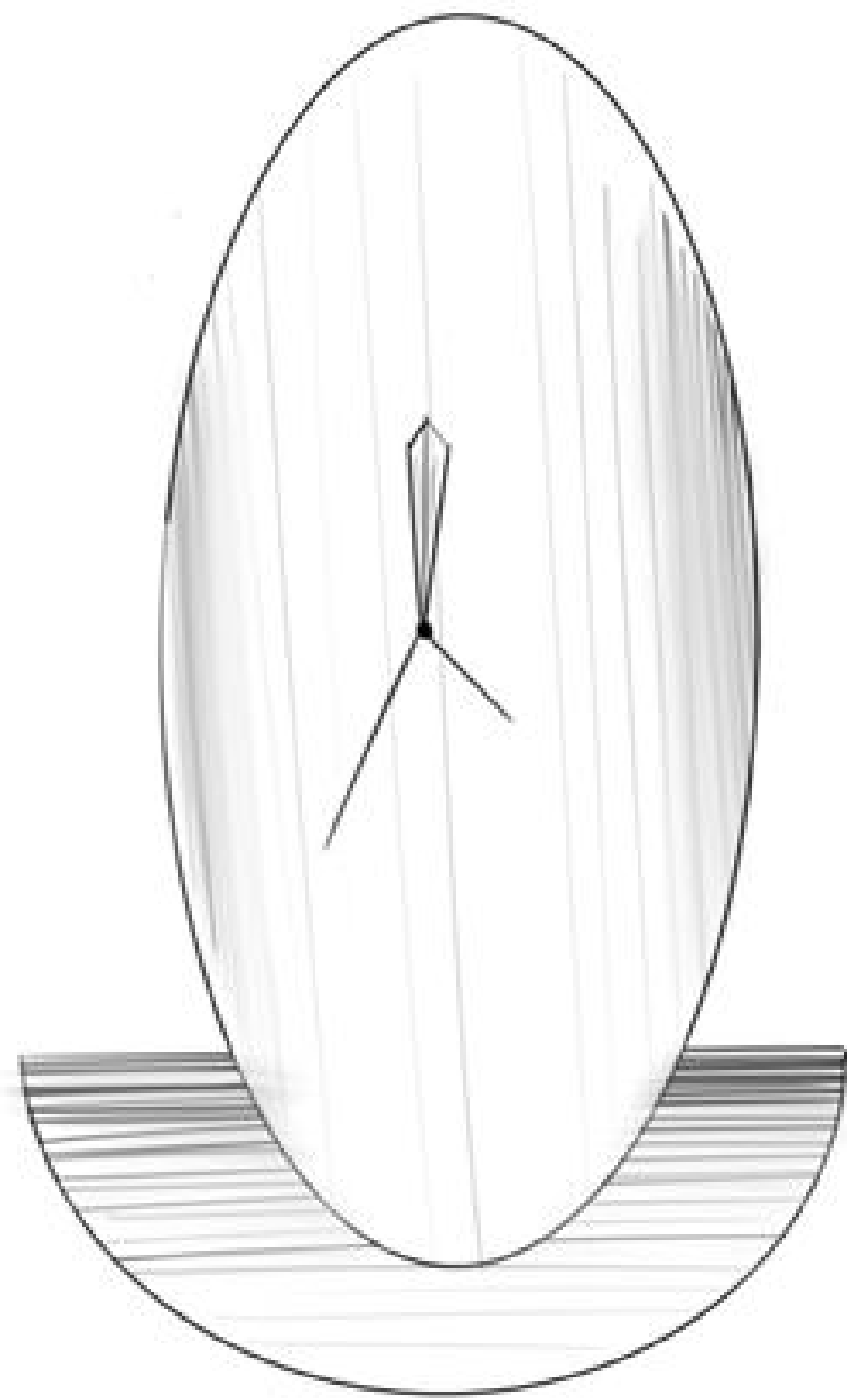
Half Cut Bamboo



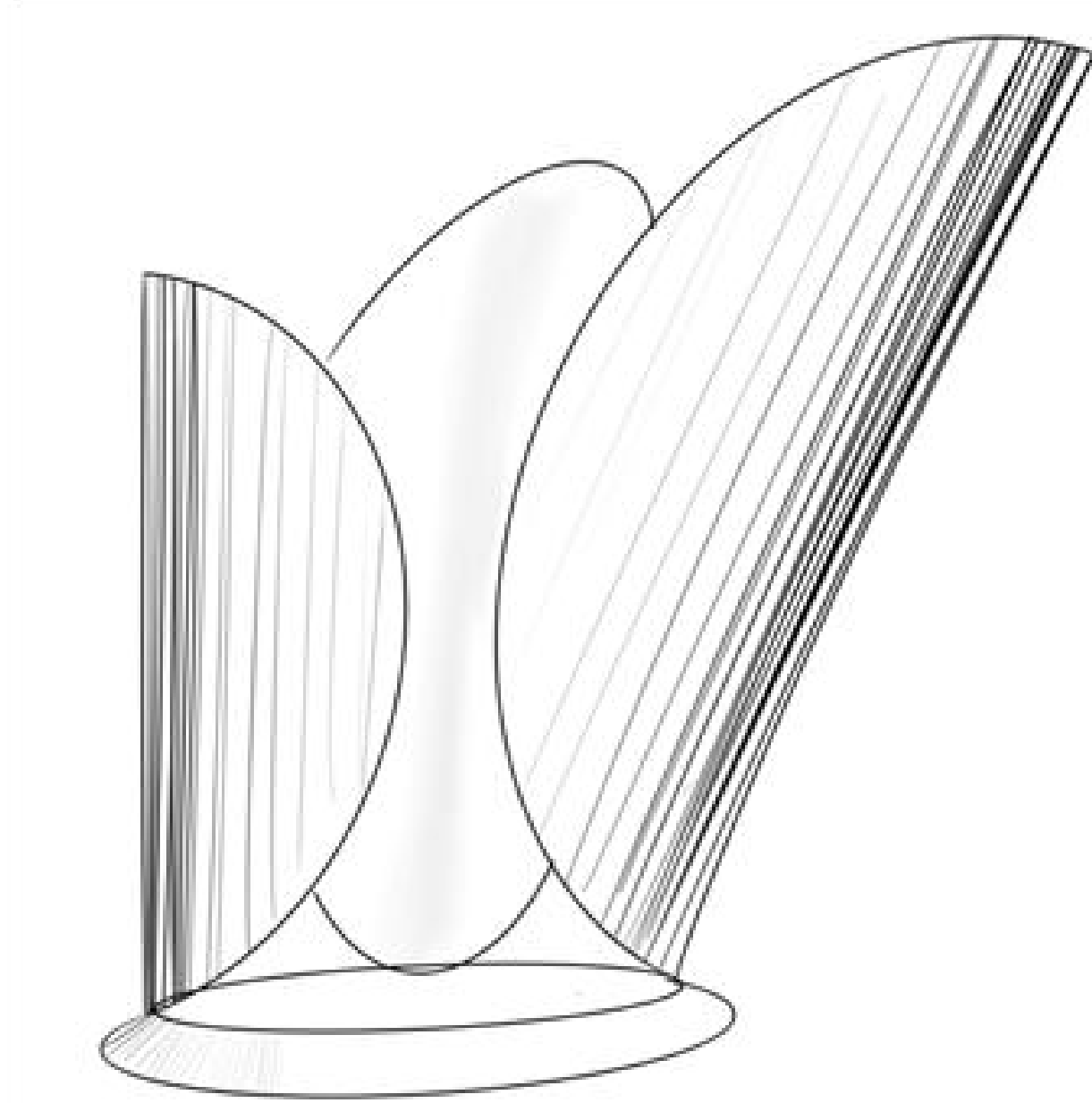
Desk Lamp



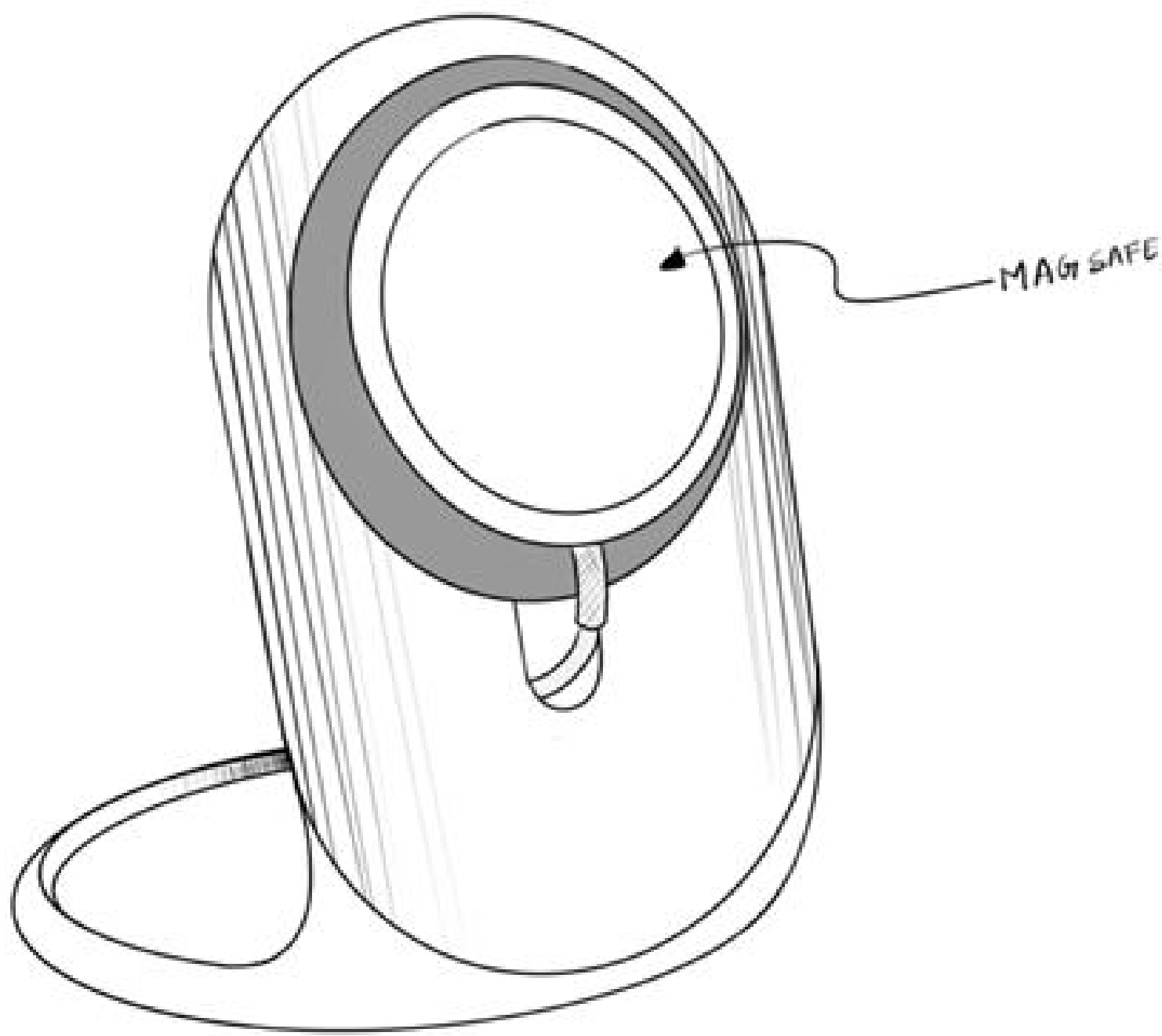
Pen Holder



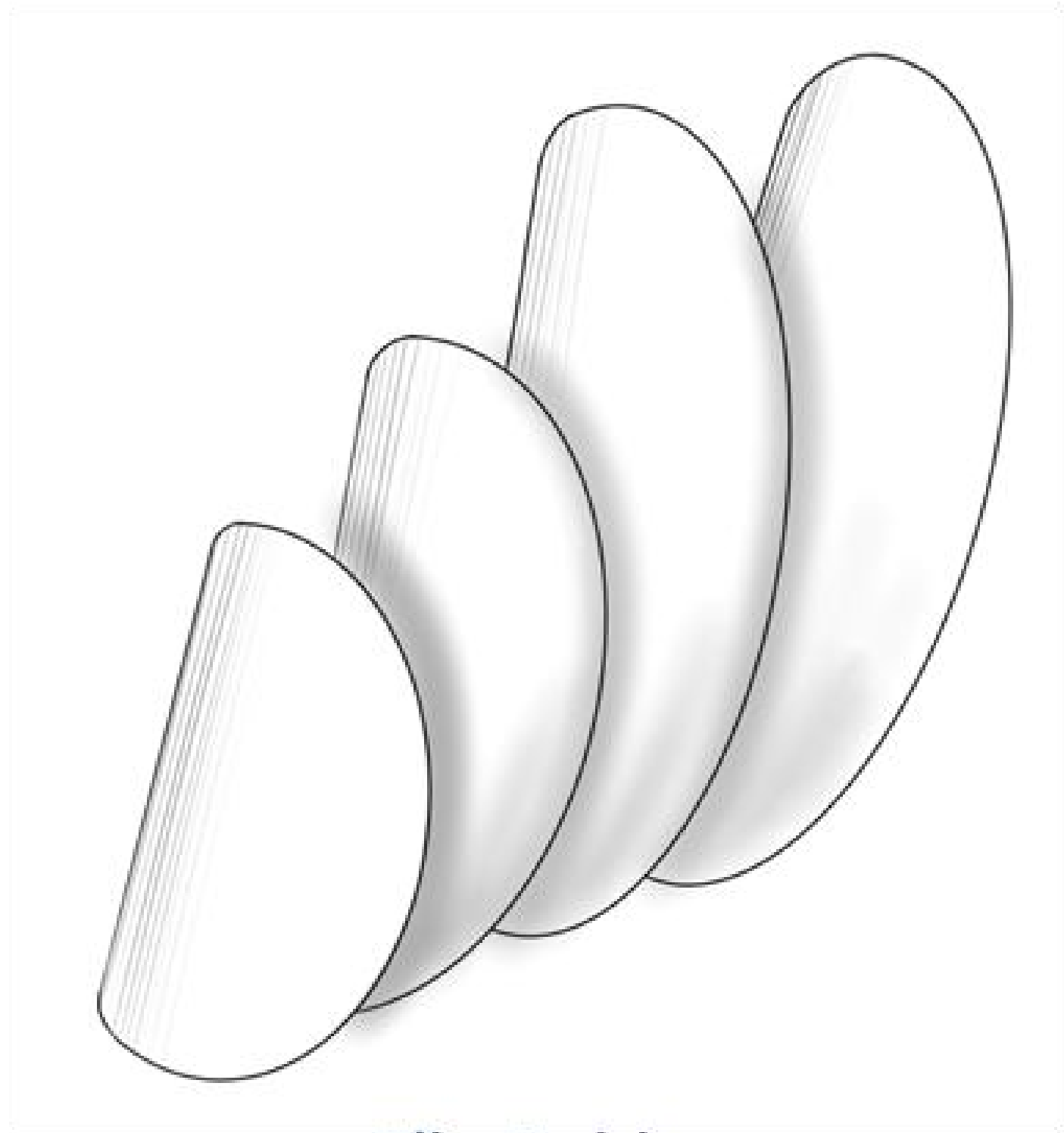
Desk Clock



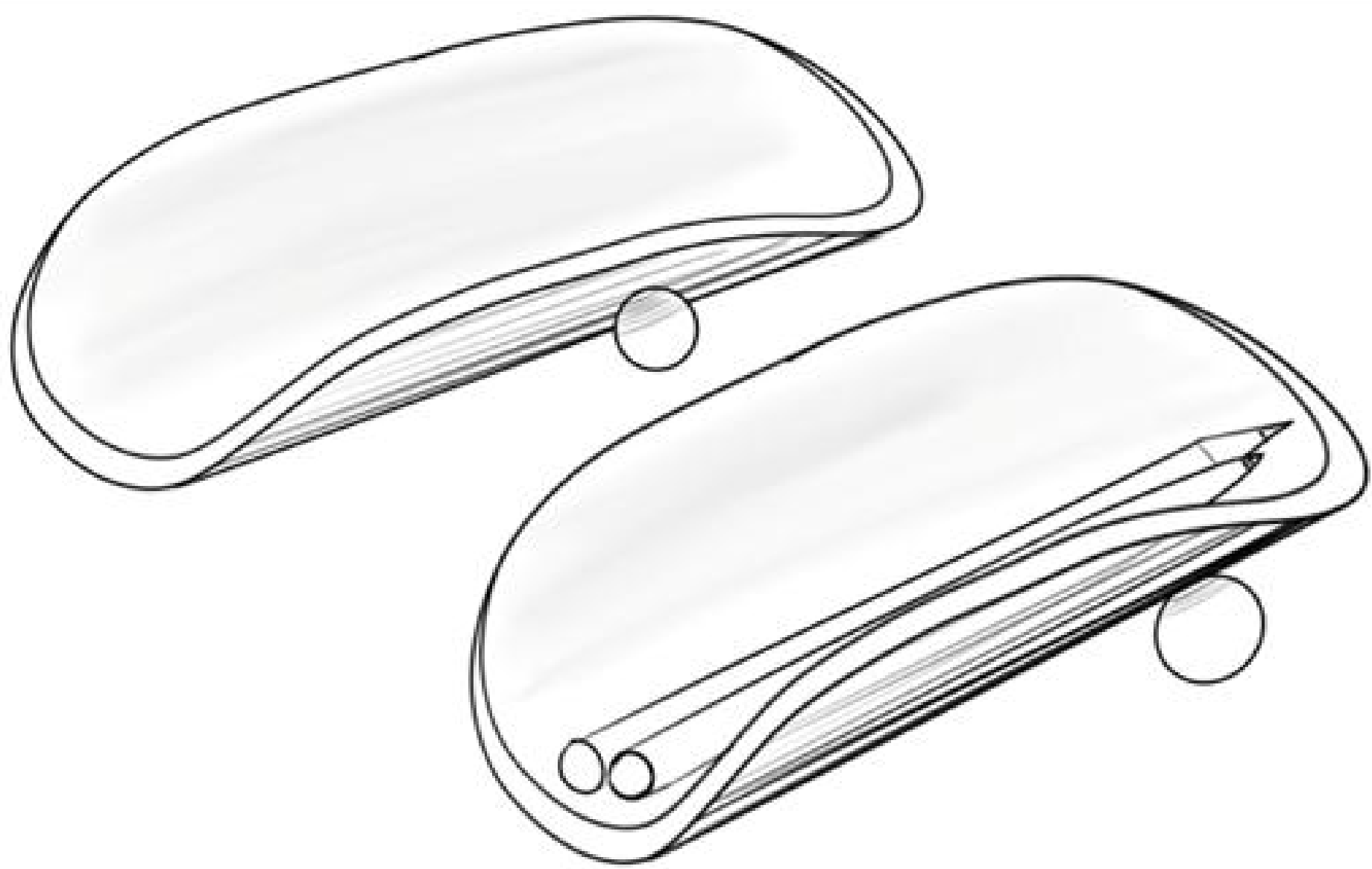
Pen Stand



MagSafe Dock



File Holder



Pen Tray

Fig. 115. Concept sketches of Desk Accessories using Half Cut Bamboo



# 18. Initial Stage Prototyping in Bamboo

## Solid Bamboo

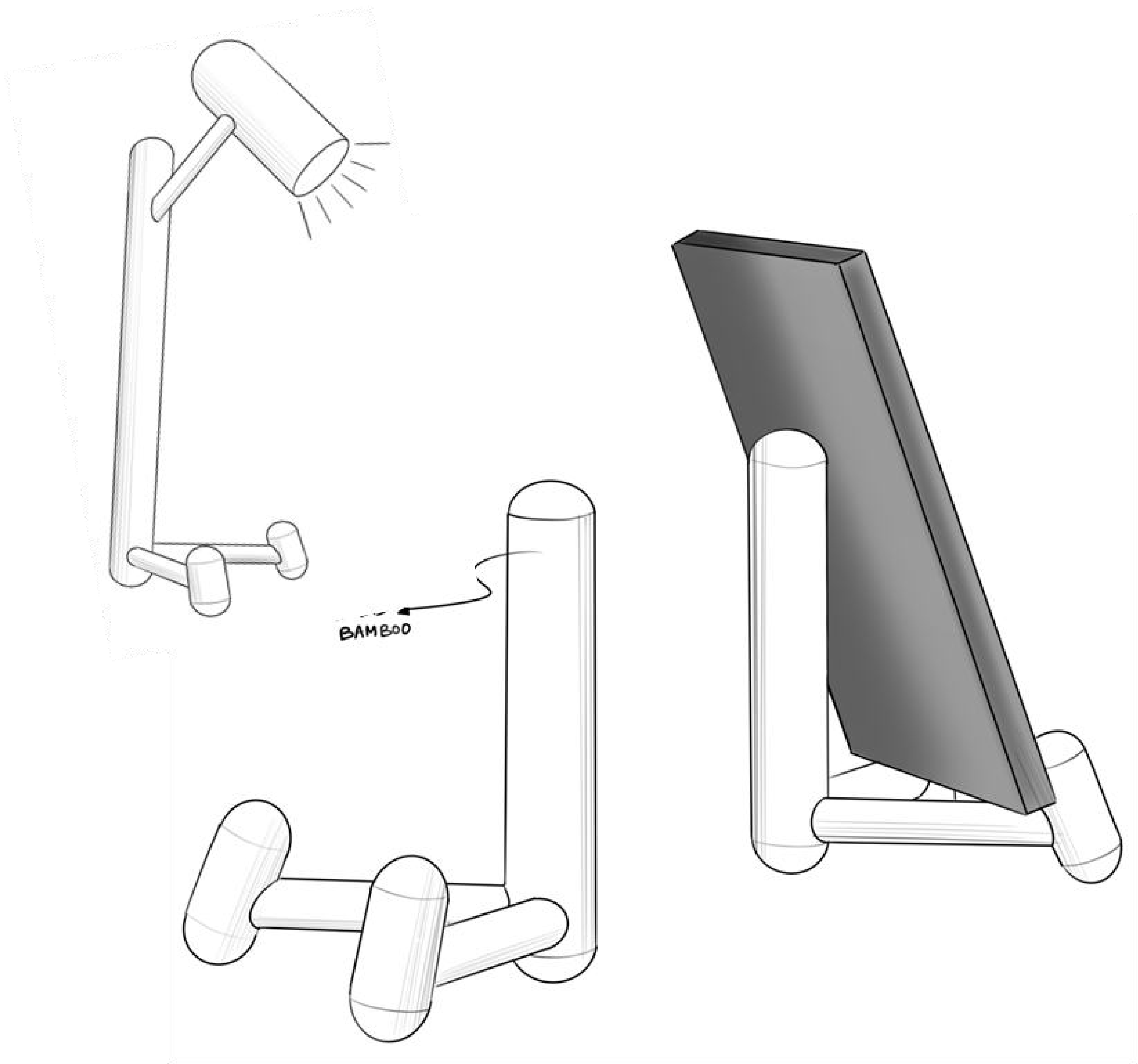


Fig. 116. Initial Stage Prototyping using Solid Bamboo



Bamboo Slats

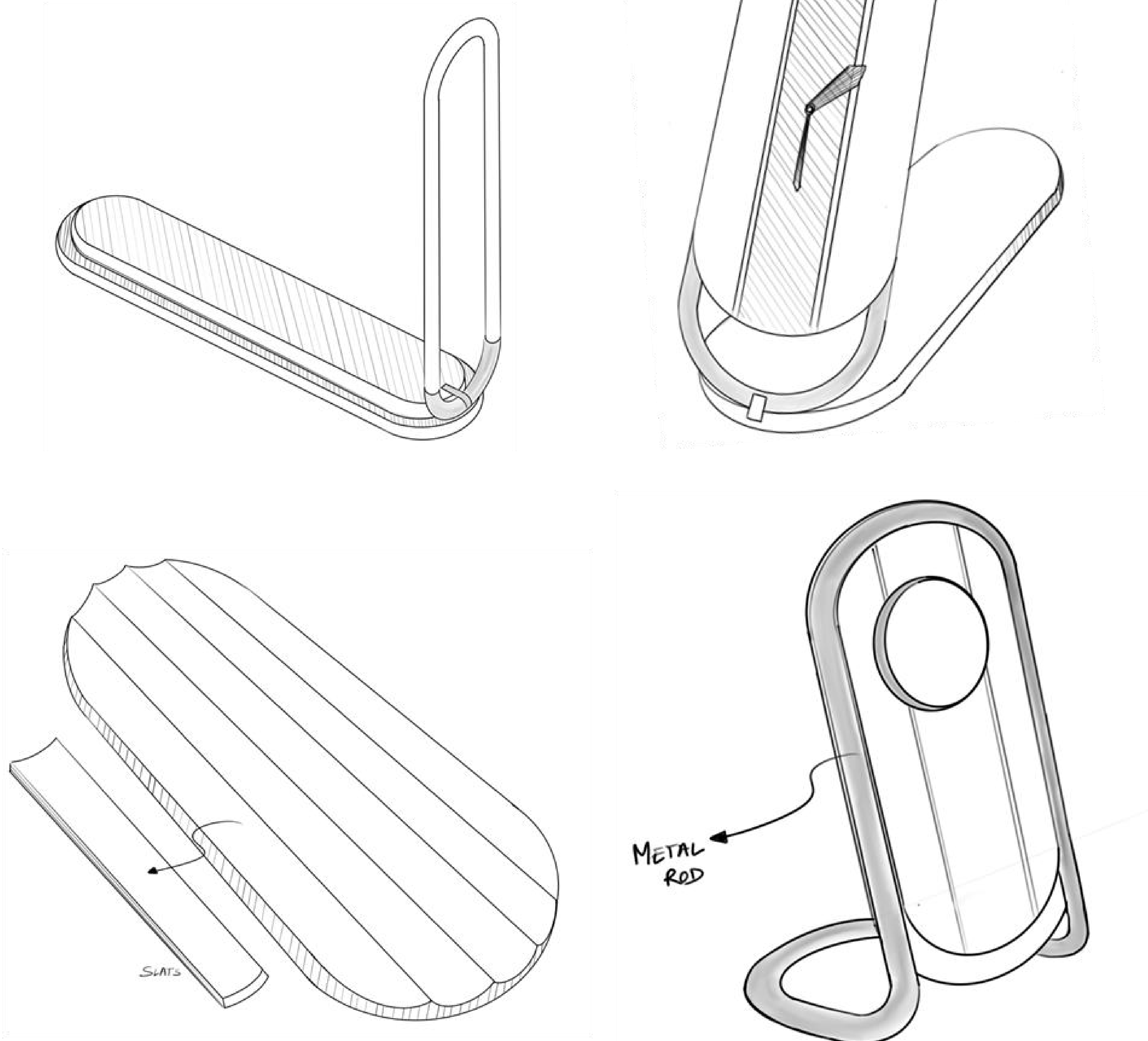


Fig. 117. Initial Stage Prototyping using Solid Bamboo



Woven Strips & Bamboo

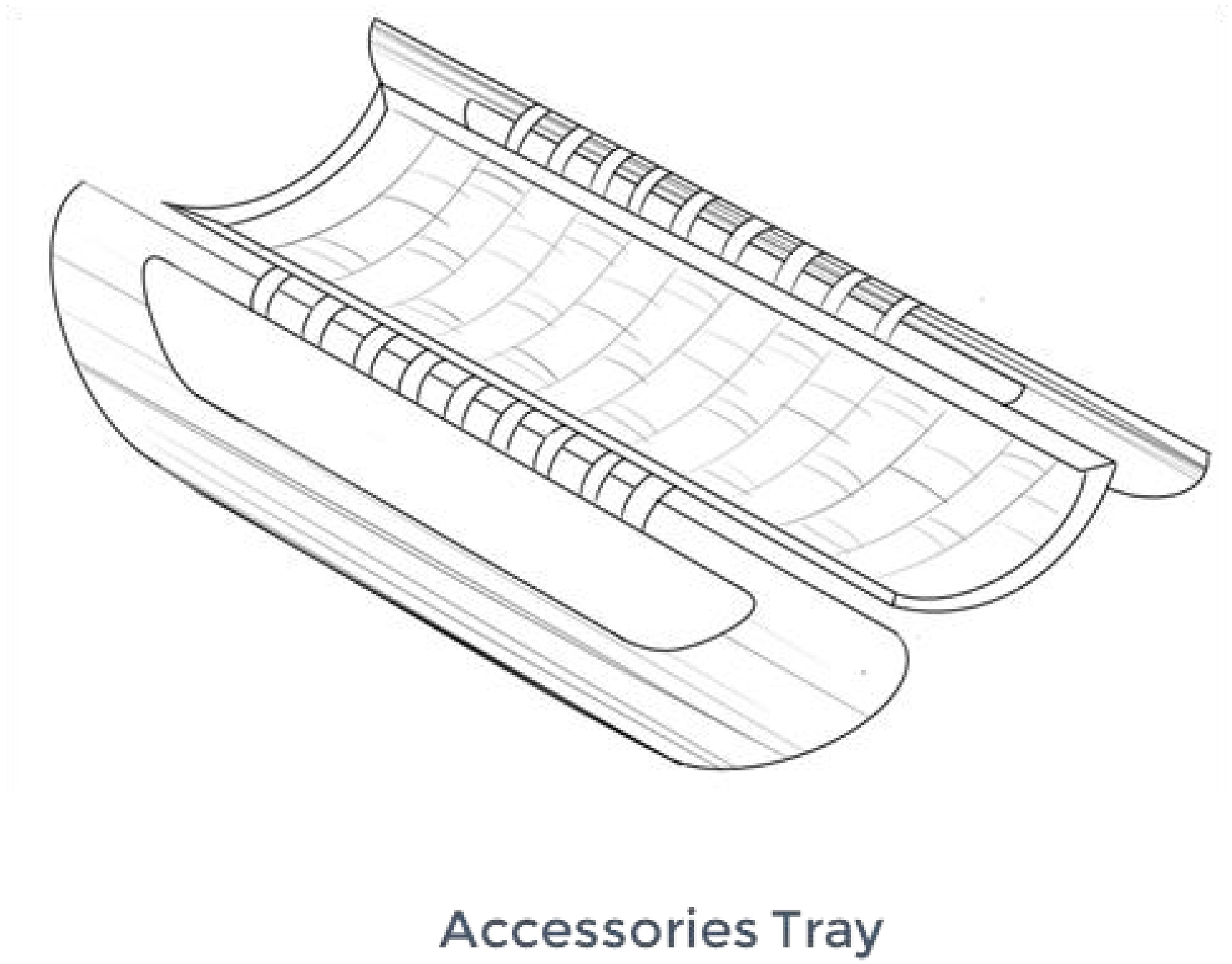
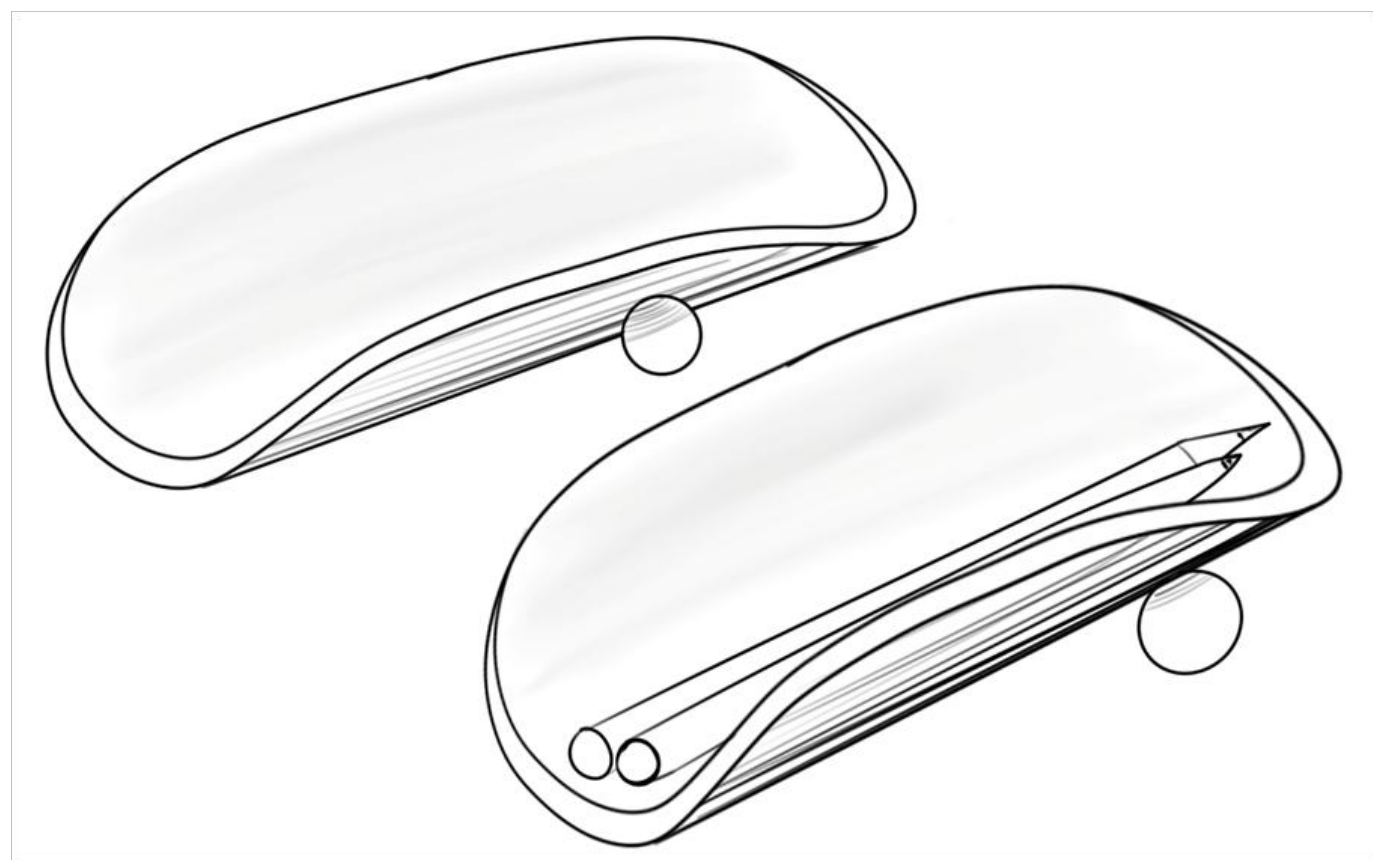


Fig. 118. Initial Stage Prototyping using Solid Bamboo and strips



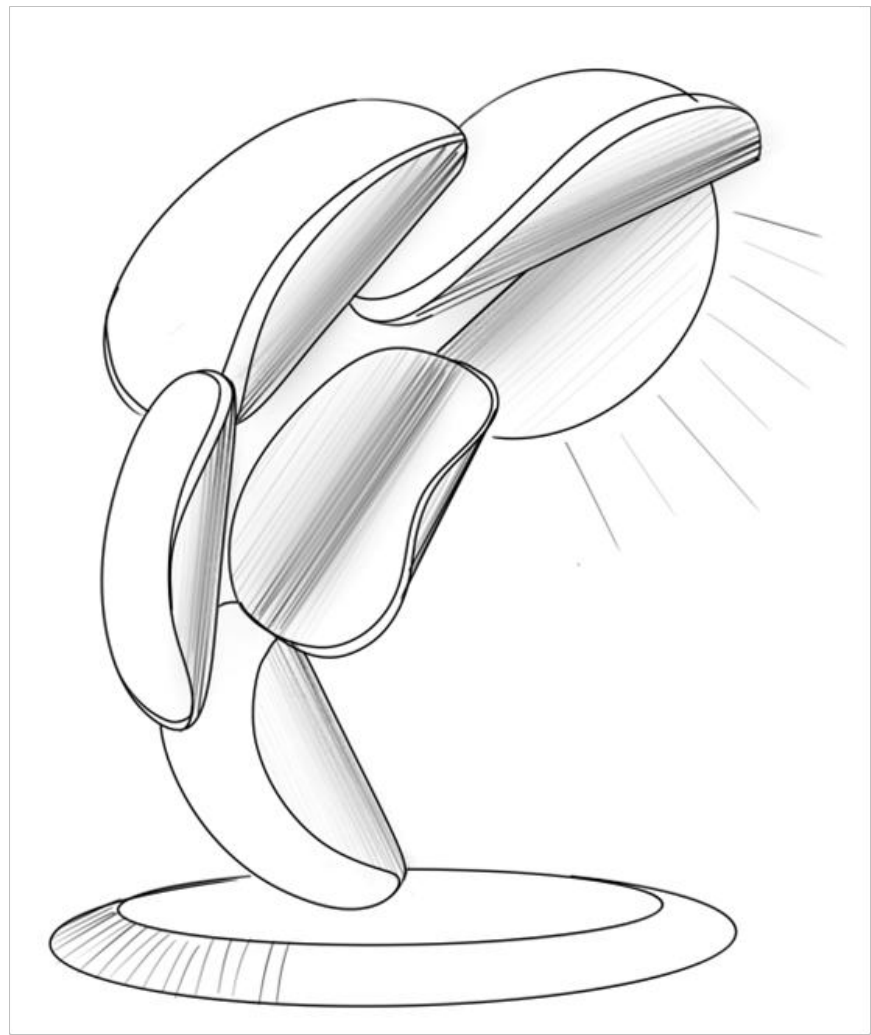
Half Cut Bamboo



Pen Tray



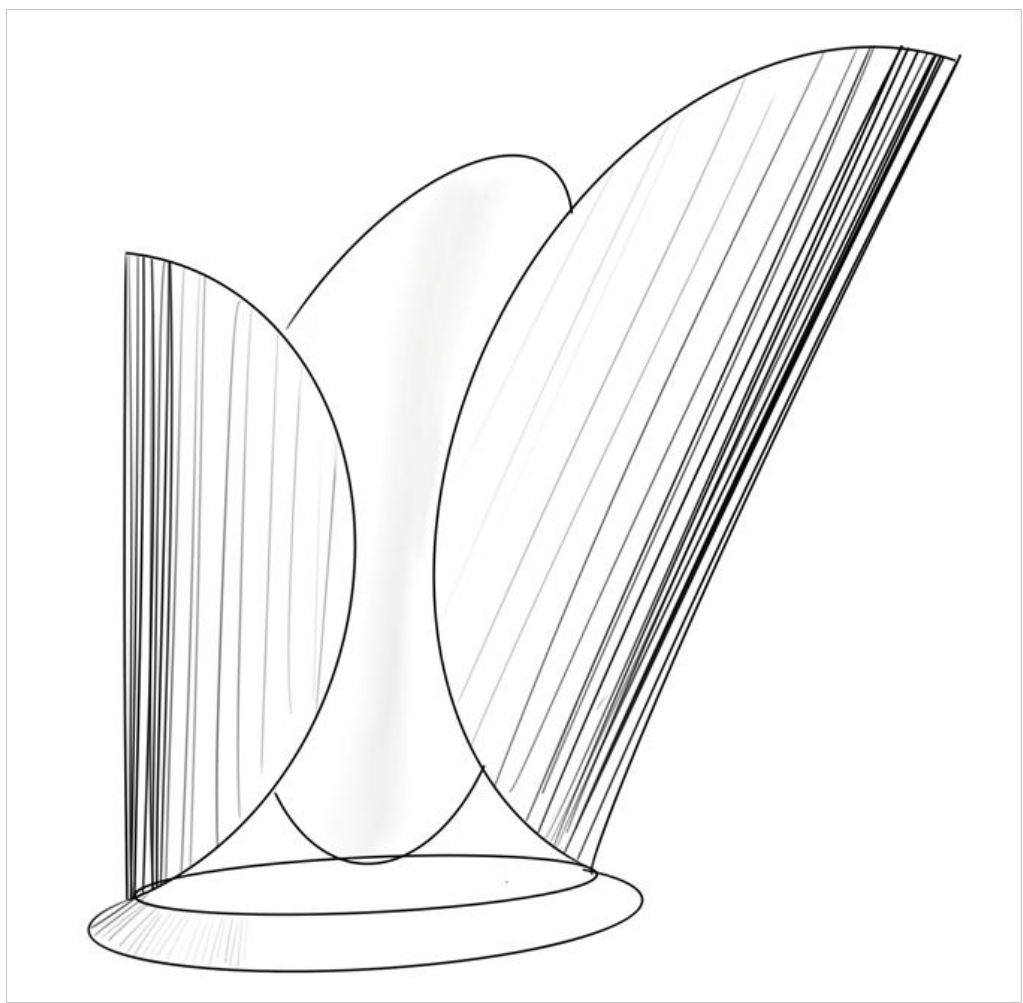
Half Cut Bamboo



Desk Lamp



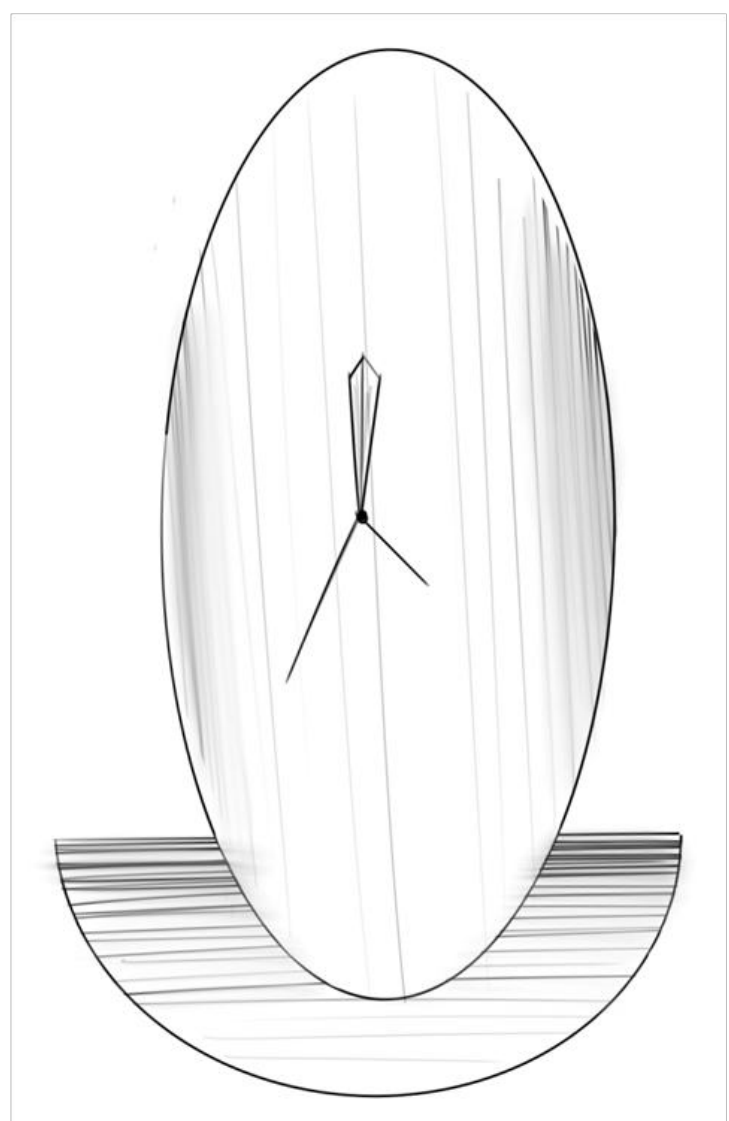
Half Cut Bamboo



Pen Stand



Half Cut Bamboo



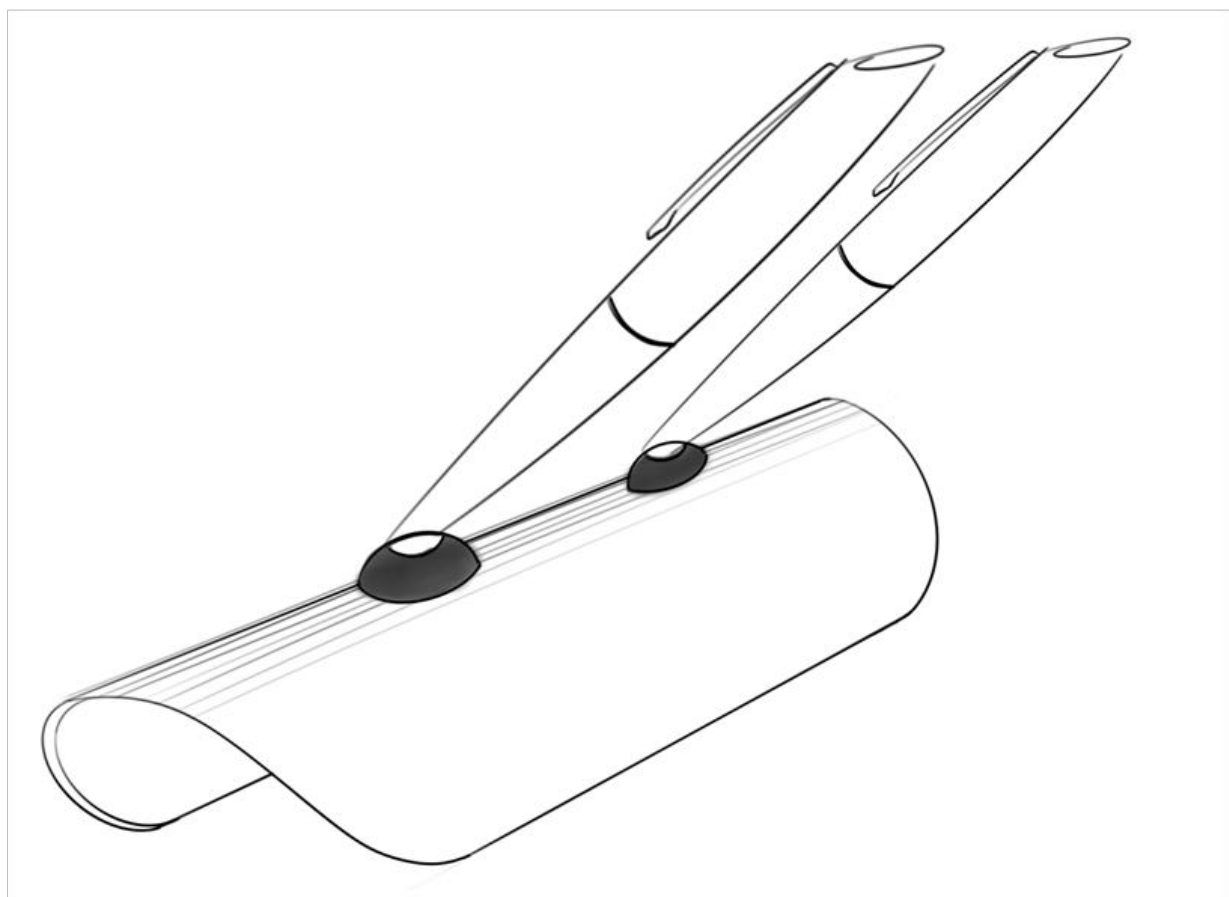
Desk Clock



Fig. 119. Initial Stage Prototyping using Half Cut Bamboo



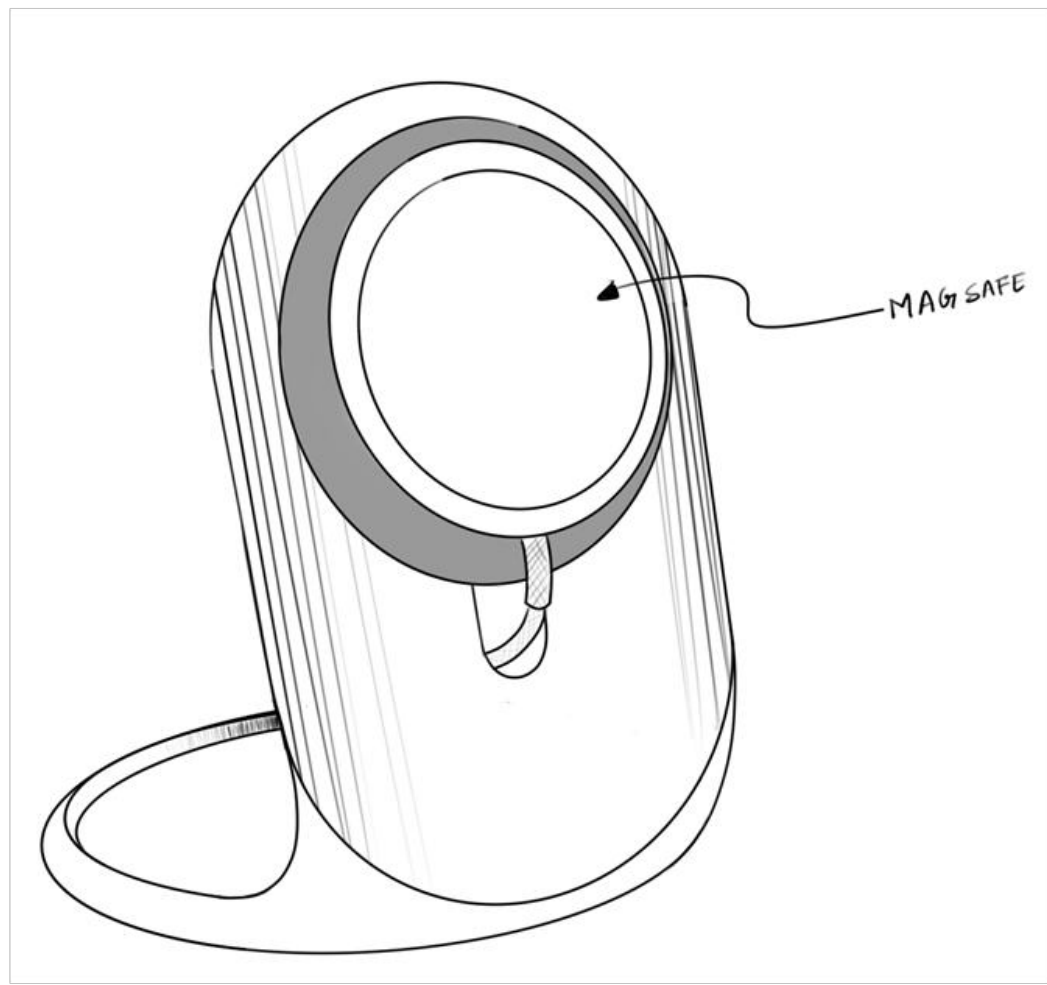
Half Cut Bamboo



Pen Holder



Half Cut Bamboo



MagSafe Dock



Half Cut Bamboo

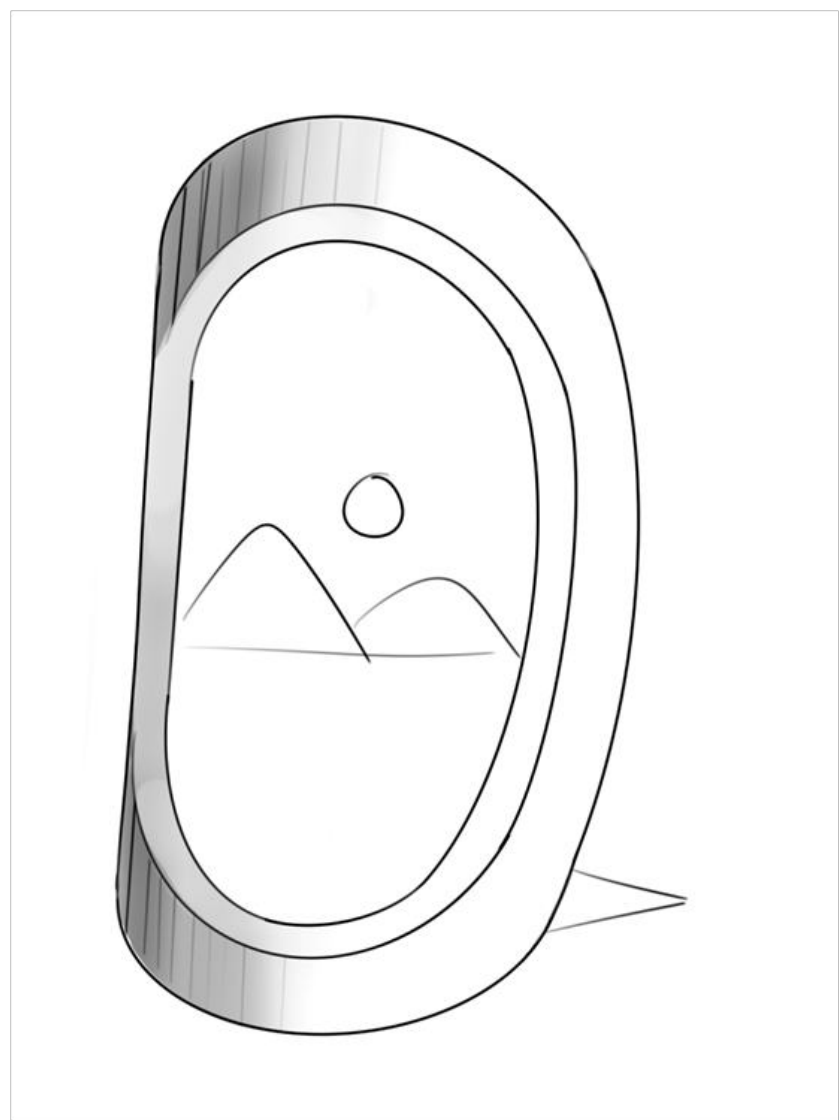
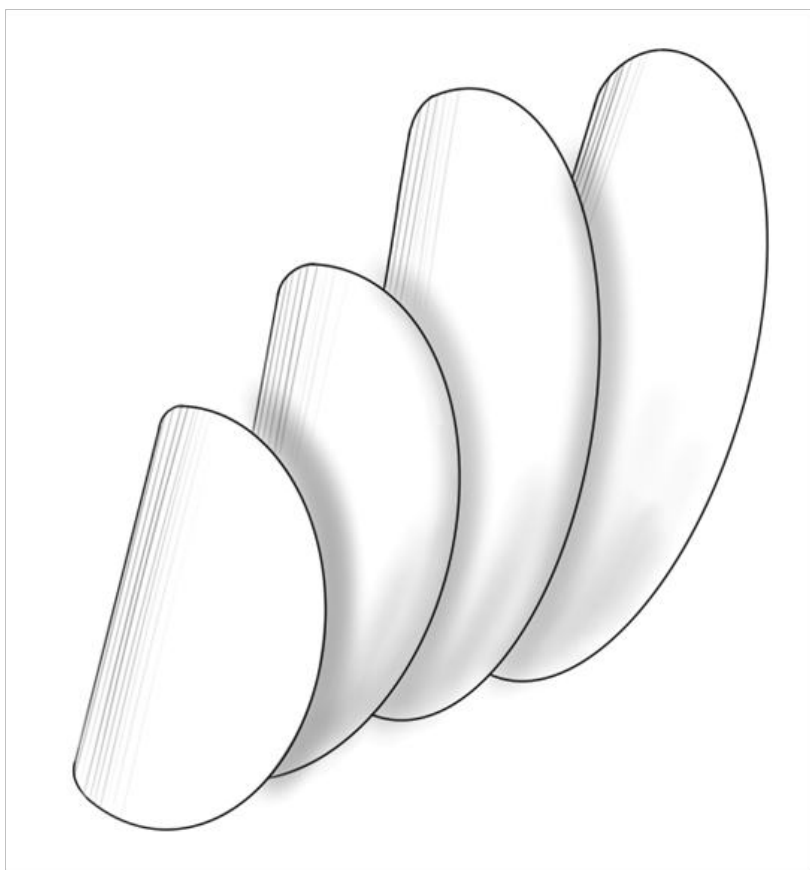


Photo Frame



Half Cut Bamboo



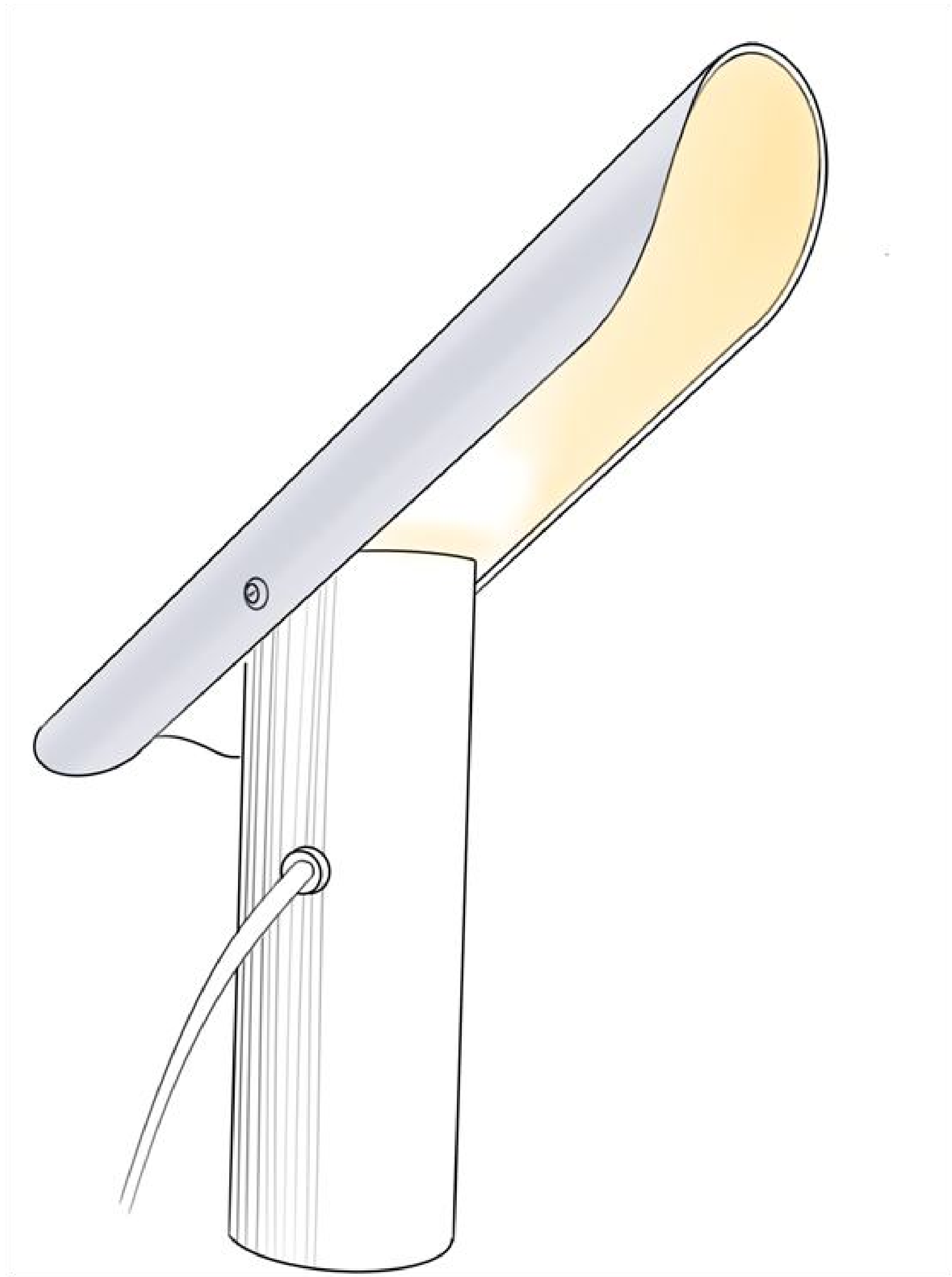
File Holder



Fig. 120. Initial Stage Prototyping using Half Cut Bamboo



Half Cut Bamboo



Desk Lamp



Fig. 121. Initial Stage Prototyping using Half Cut Bamboo



## 19. Final CAD Models



*Fig. 122. CAD Model of Executive Desk Accessories*





Fig. 123. CAD Model of Desk Lamp 1





Fig. 124. CAD Model of Desk Lamp 2





*Fig. 125. CAD Model of Book Holder*





*Fig. 126. CAD Model of Accessories Tray*





Fig. 127. CAD Model of Pen Stand





Fig. 128. CAD Model of Desk Clock





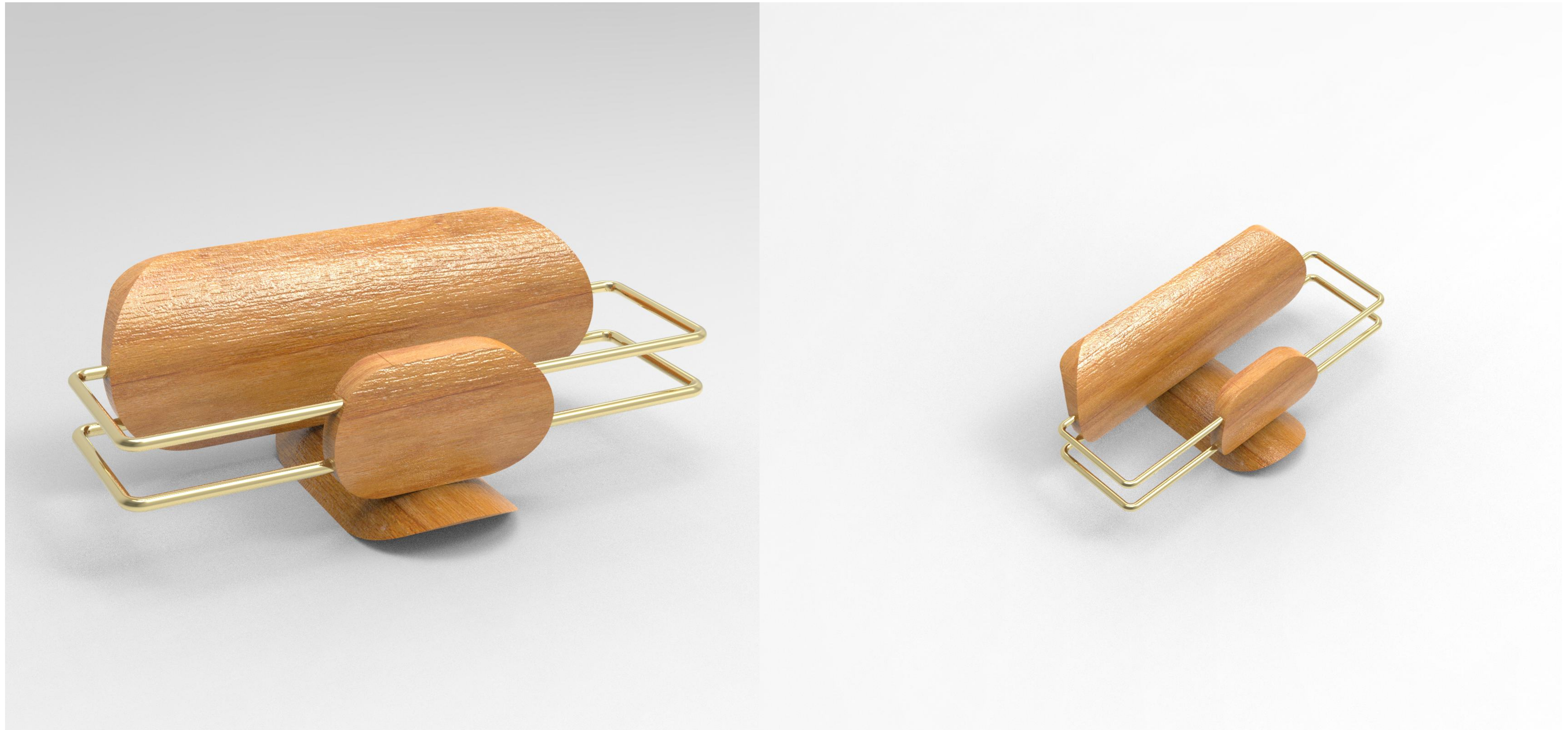
Fig. 129. CAD Model of Pen Holder





Fig. 130. CAD Model of Photo Frame





*Fig. 131. CAD Model of Visiting Card Holder*





*Fig. 132. CAD Model of Wireless Charging Dock*



## 20. Finished Products



*Fig. 133. Executive Desk Accessories made using Bamboo*





Fig. 134. Executive Desk Lamp made using Bamboo





*Fig. 135. Executive Desk Lamp made using Bamboo*





Fig. 136. Executive Book Holder made using Bamboo





Fig. 137. Executive Accessories Tray made using Bamboo





Fig. 138. Executive Pen Stand made using Bamboo





Fig. 139. Executive Desk Clock made using Bamboo



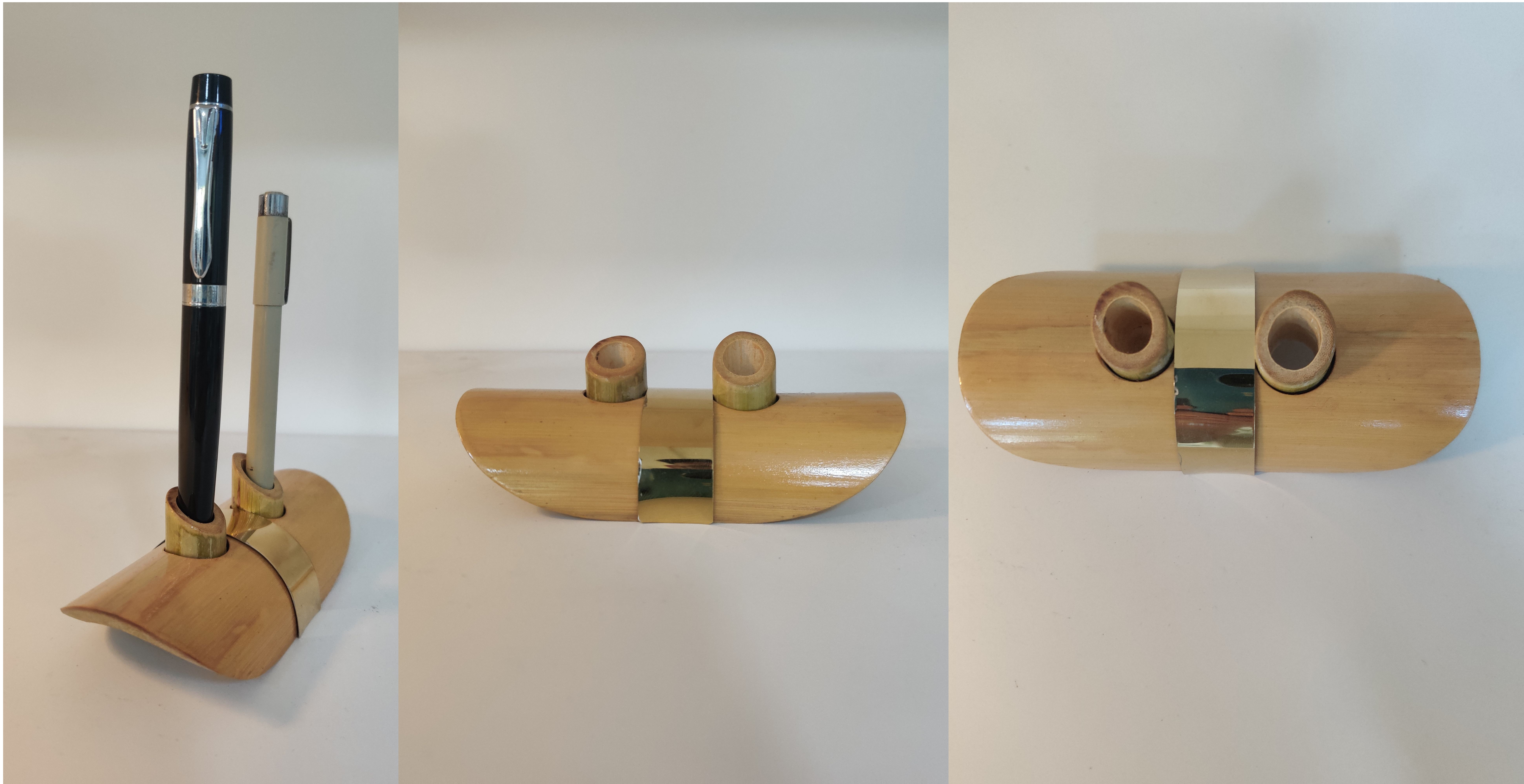


Fig. 140. Executive Pen Holder made using Bamboo





Fig. 141. Executive Wireless Charging Dock made using Bamboo





Fig. 142. Executive Photo Frame made using Bamboo





Fig. 143. Executive Visiting Card Holder made using Bamboo



21. Dimensions

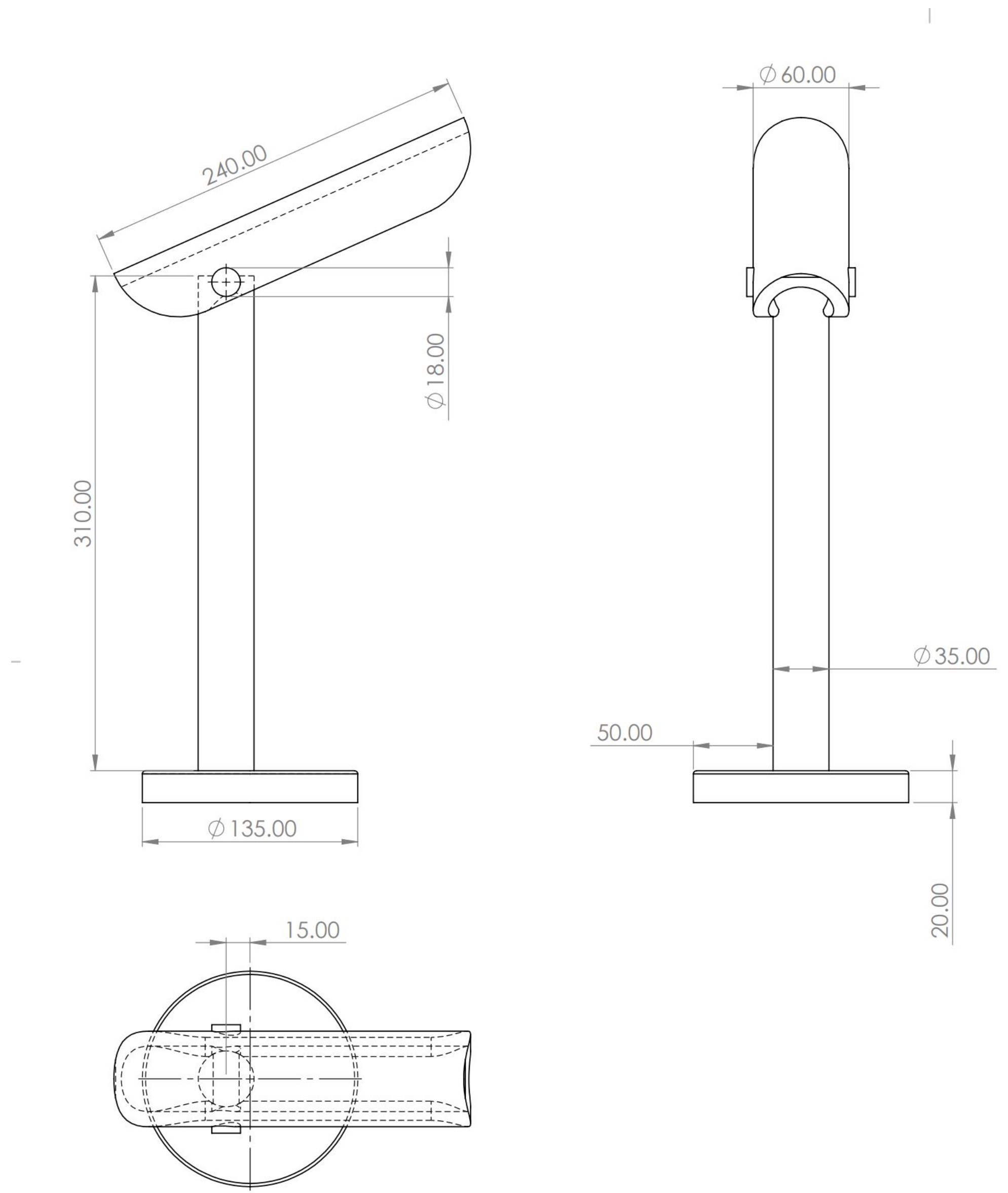


Fig. 144. Dimensions of Desk Lamp 1

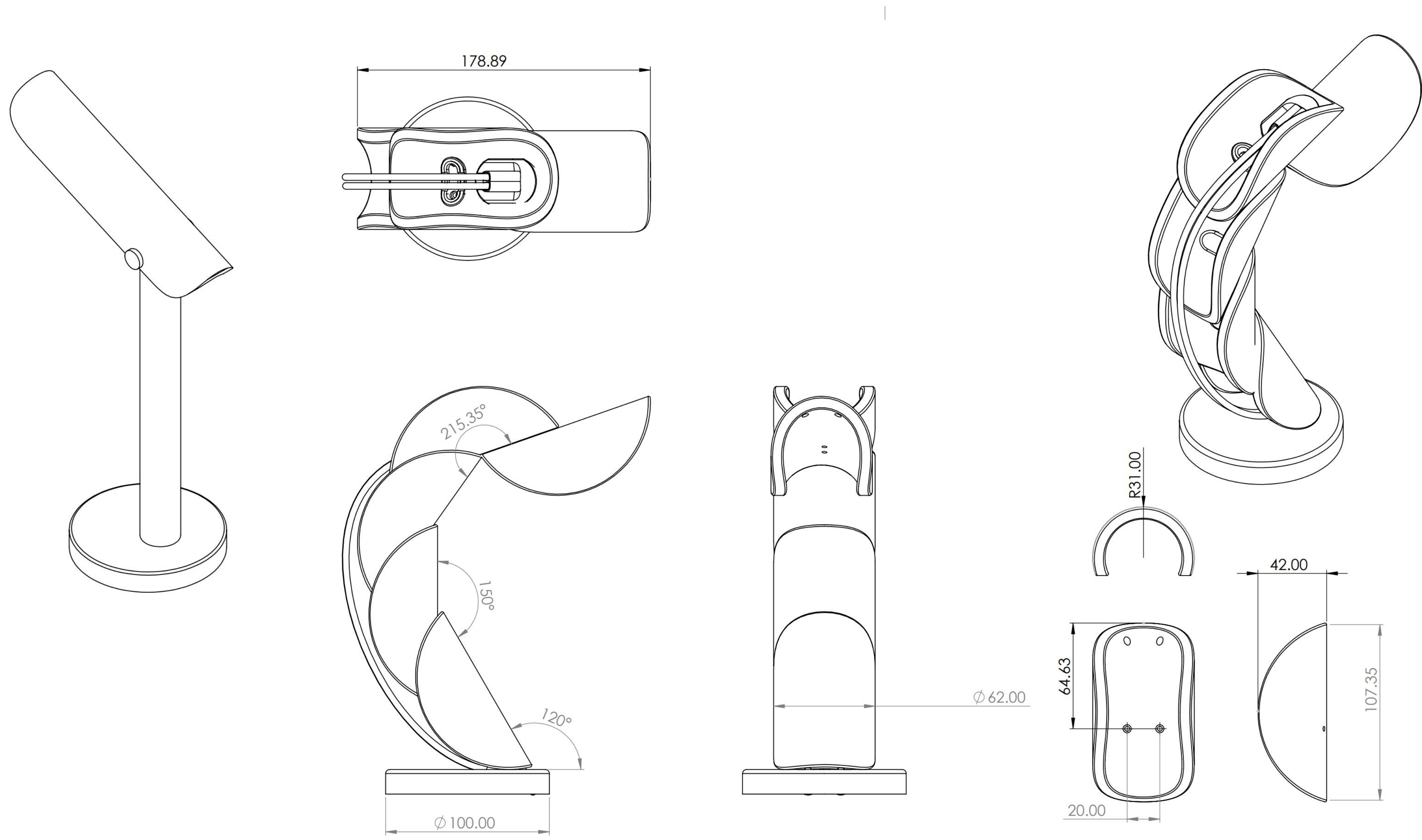


Fig. 145. Dimensions of Desk Lamp 2



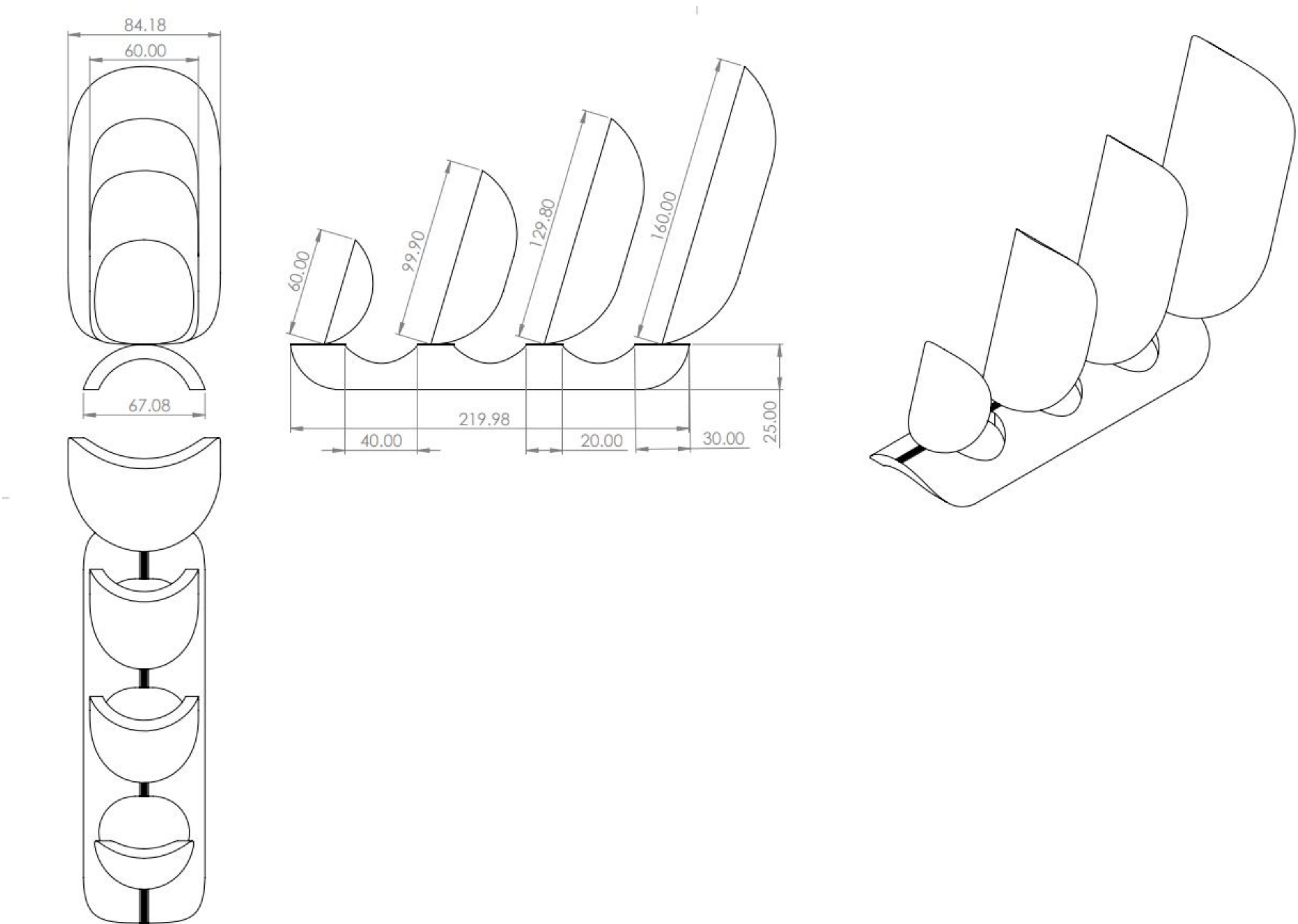


Fig. 146. Dimension of Book Holder

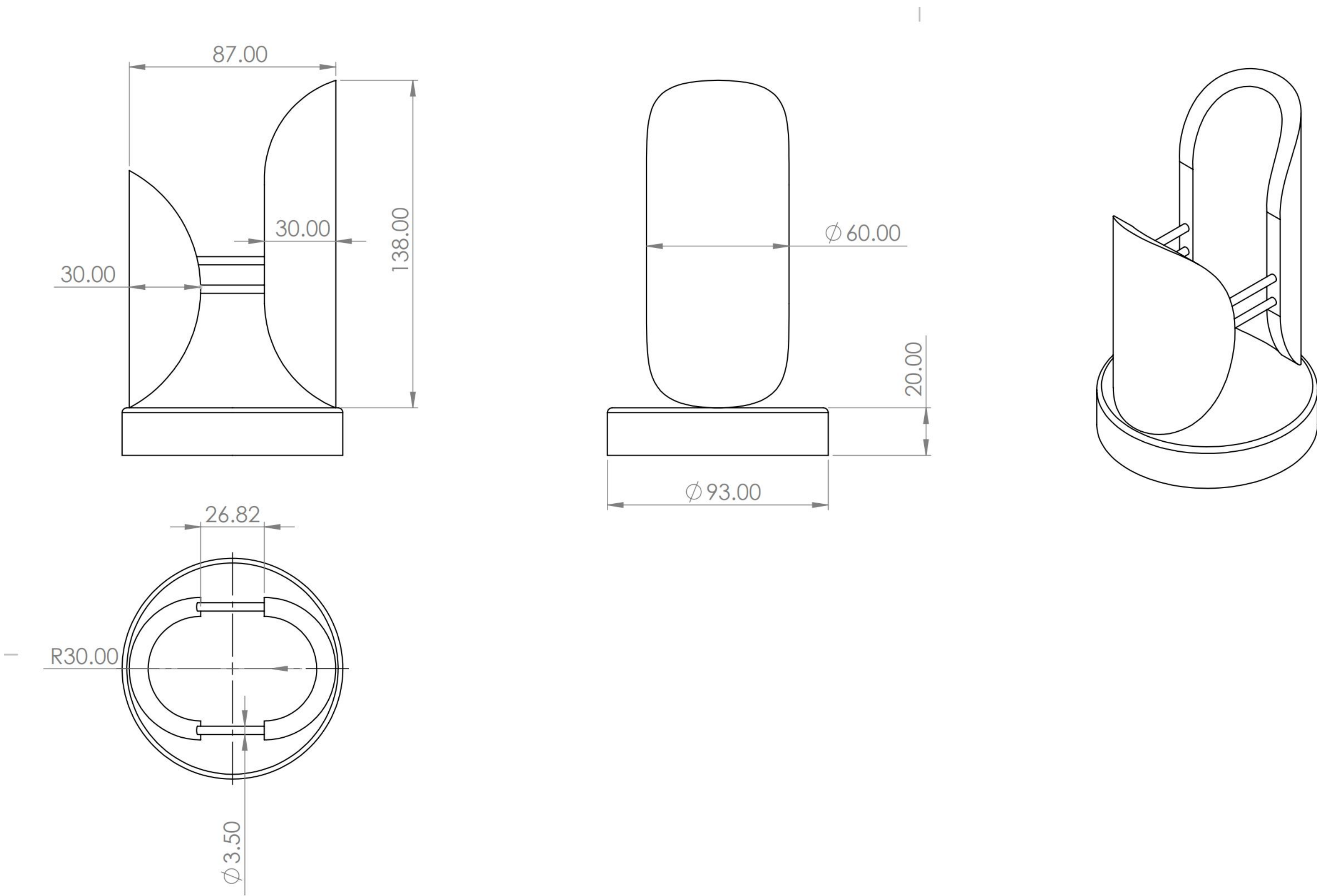


Fig. 147. Dimension of Pen Stand



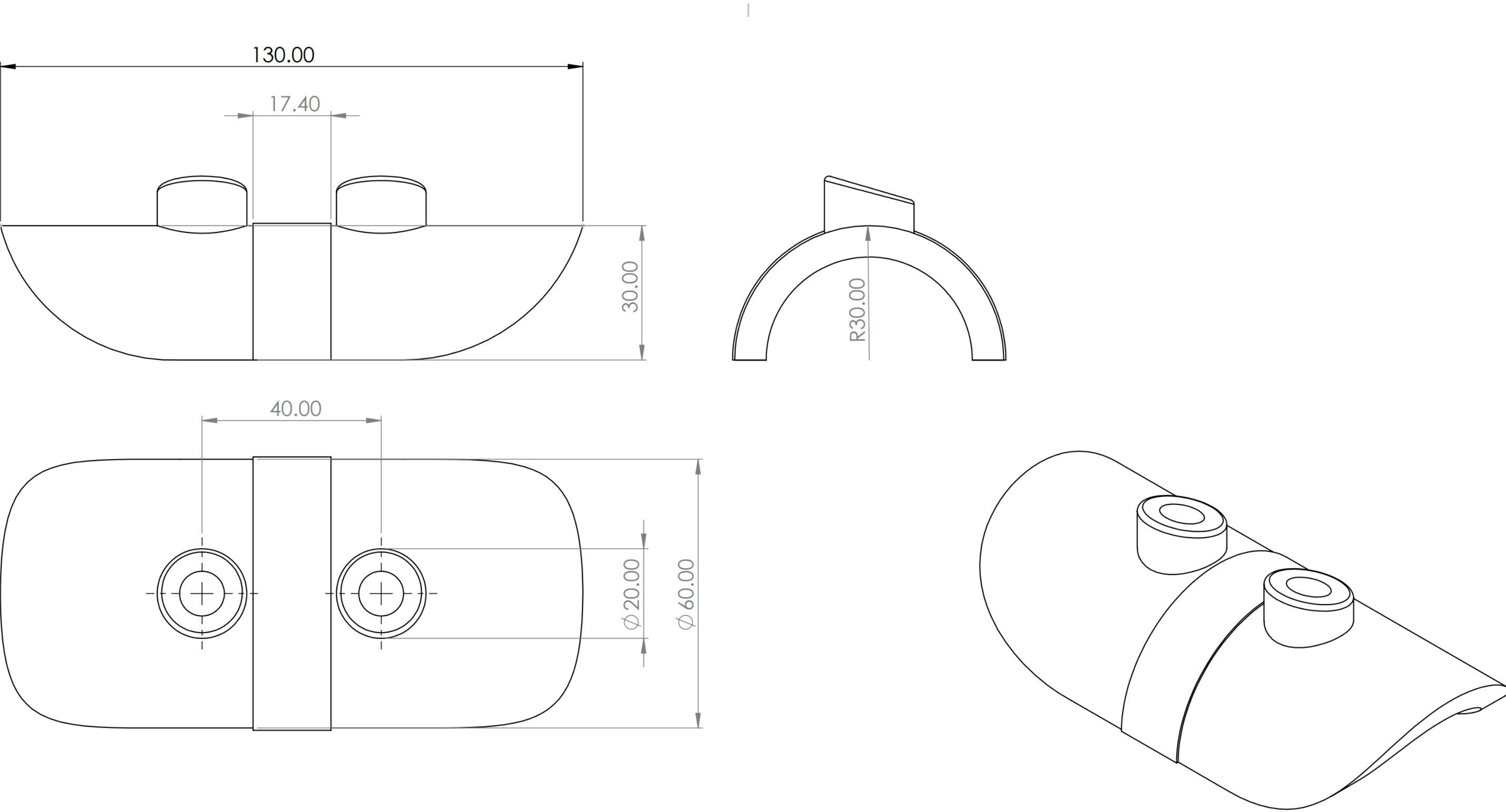


Fig. 148. Dimension of Pen Holder

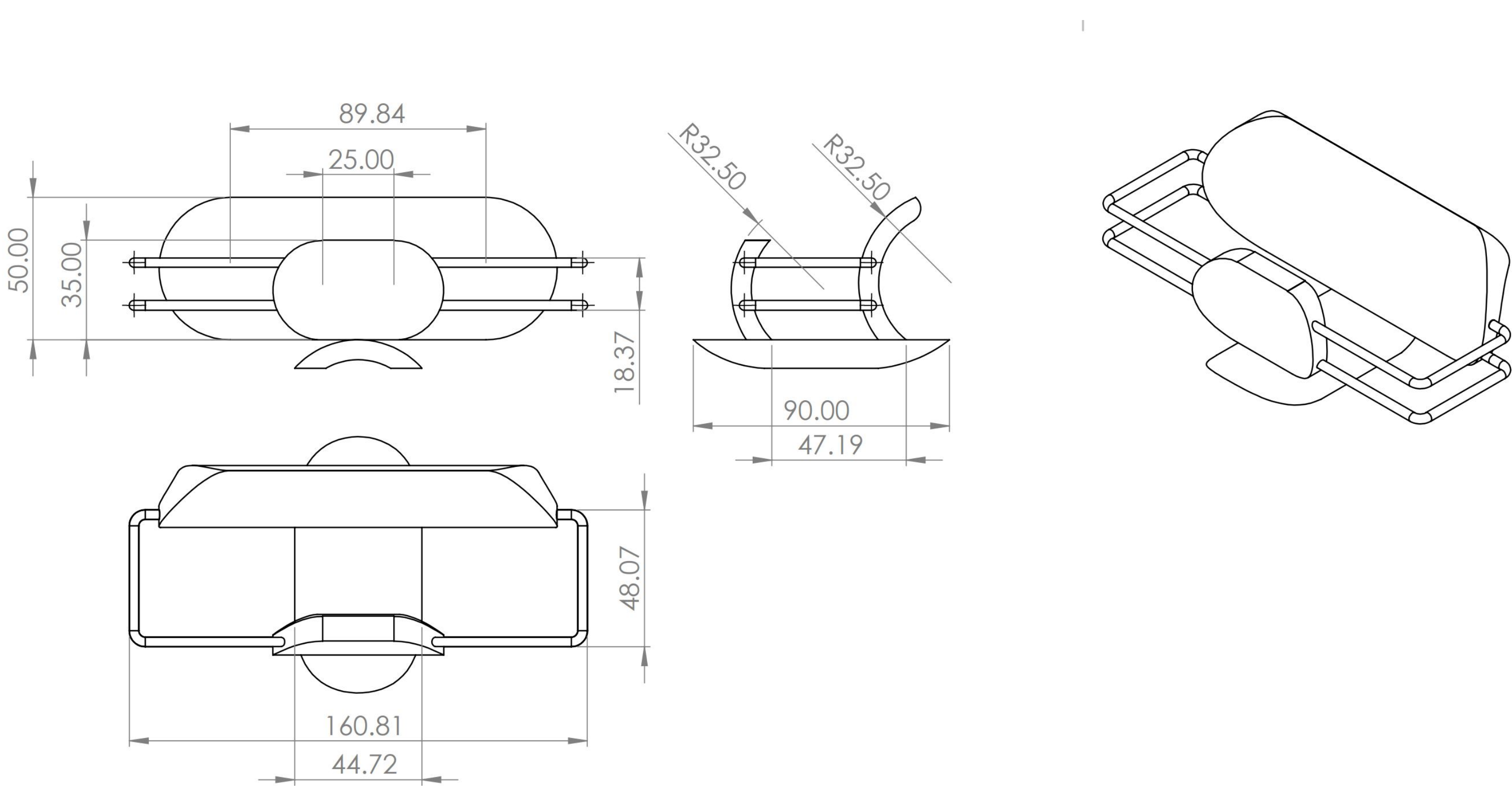


Fig. 149. Dimension of Visiting Card Holder



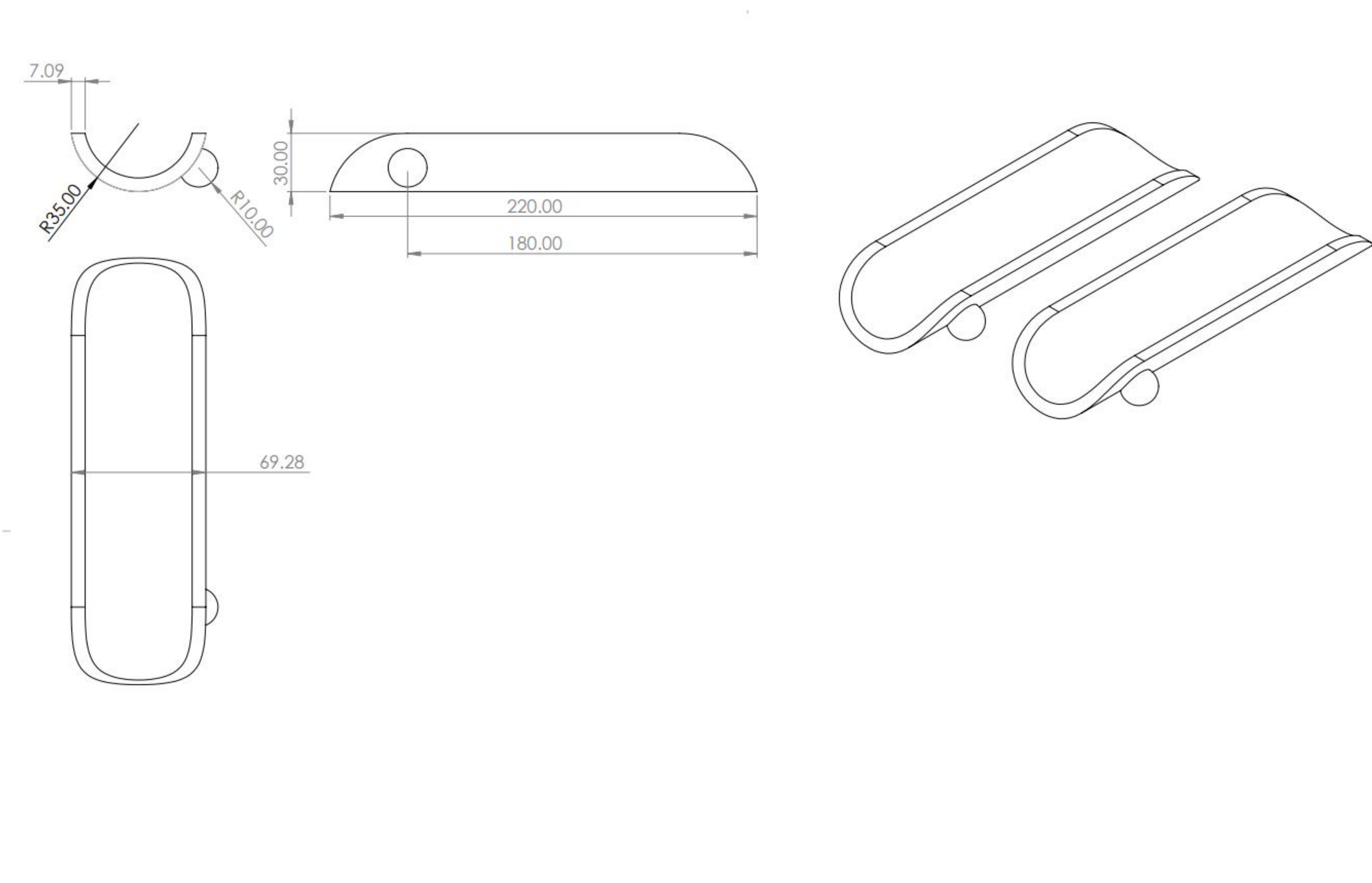


Fig. 150. Dimension of Accessories Tray

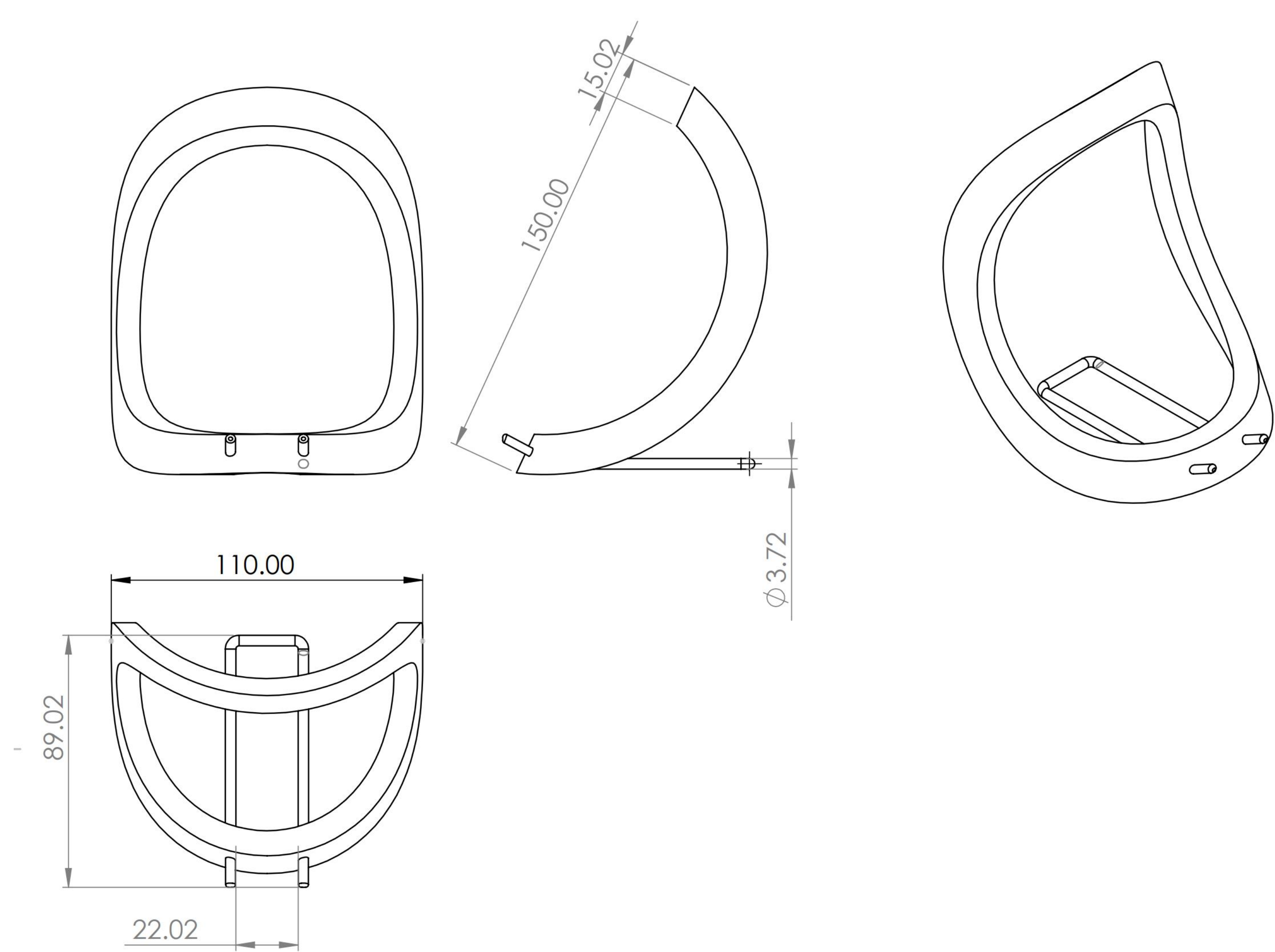


Fig. 151. Dimension of Photo Frame



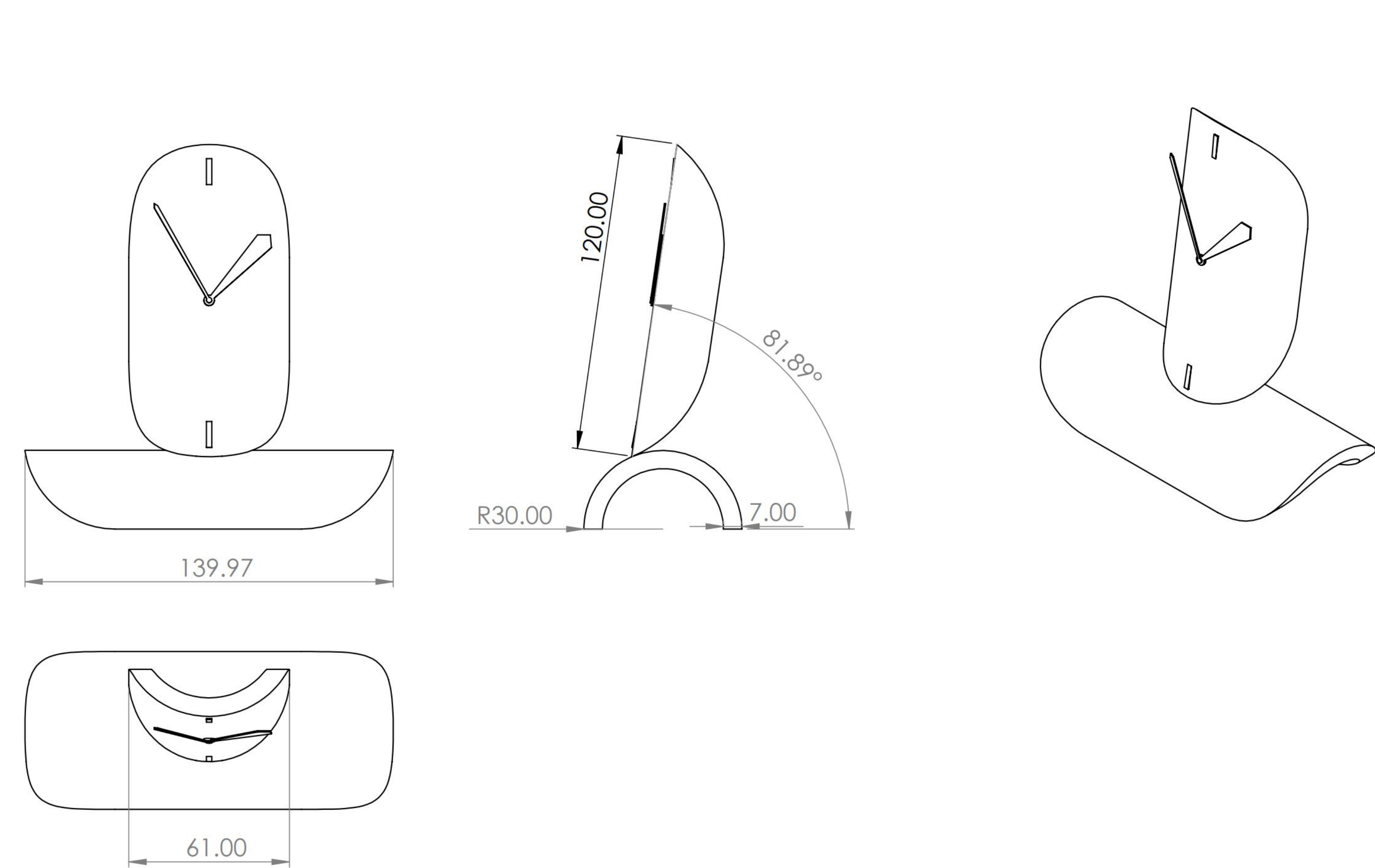


Fig. 152. Dimensions of Desk Clock

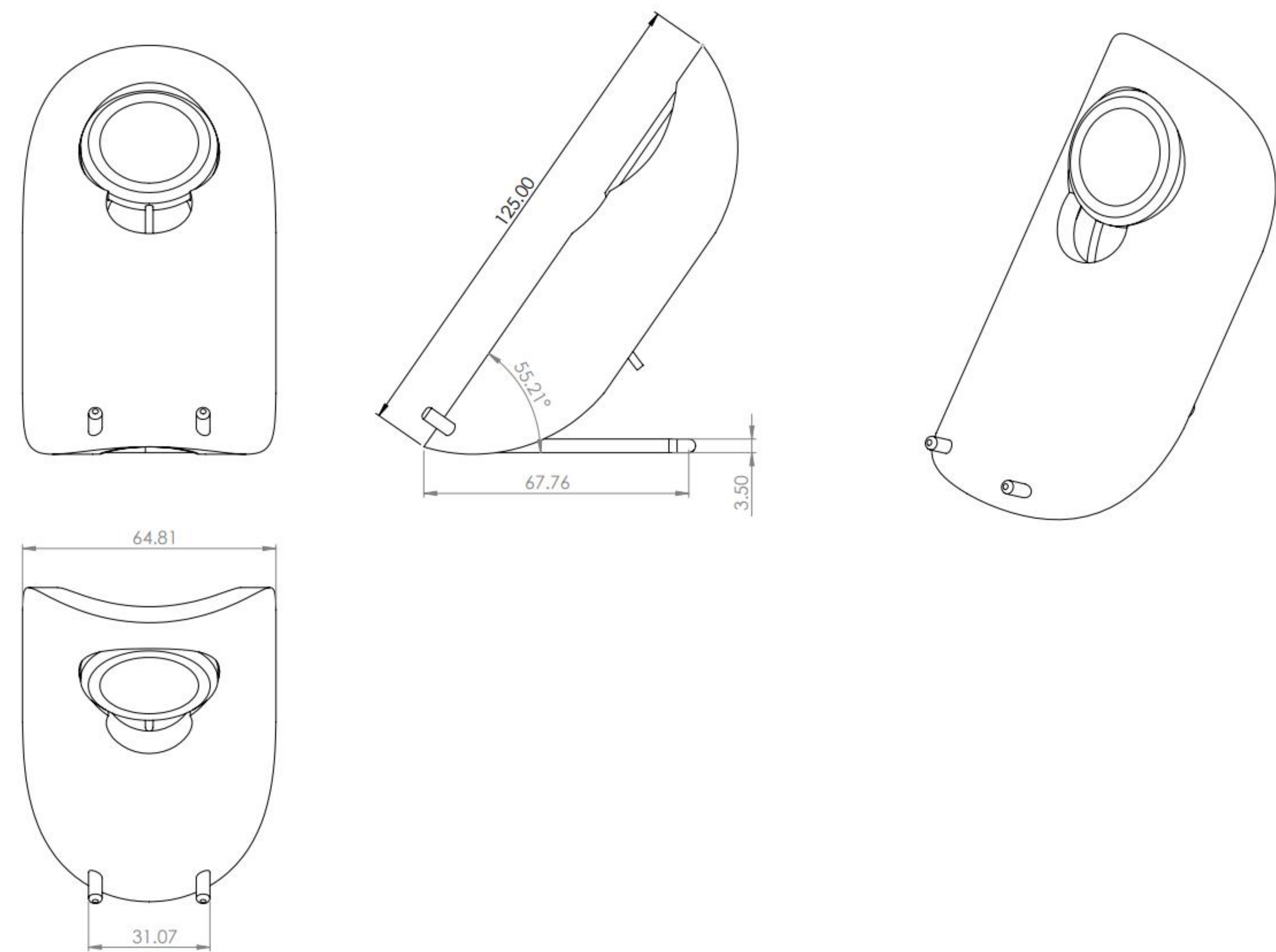


Fig. 153. Dimensions of Wireless Charging Dock



## 22. References

- [10 Types of Bamboo in India | Bamboo Varieties in India • India Gardening](#)
- [How Durable is Bamboo? \(guaduabamboo.com\)](#)
- [Privacy error \(prashantbamboo.com\)](#)
- [Value chain analysis of bamboo in North Eastern Region of India \(egranth.ac.in\)](#)
- [List of bamboo species - Wikipedia](#)
- [Development of bamboo-based technology& value-added products improving life and livelihood in NE | Department Of Science & Technology \(dst.gov.in\)](#)
- [Bamboo Studio facility: Industrial Design Centre \(IDC\) IIT Bombay, India](#)
- [What is the Manufacturing Process of Bamboo Timber? - \(esshelf.com\)](#)
- [Tools, Small Technologies and Design for Bamboo Craft : \(agrao.in\)](#)