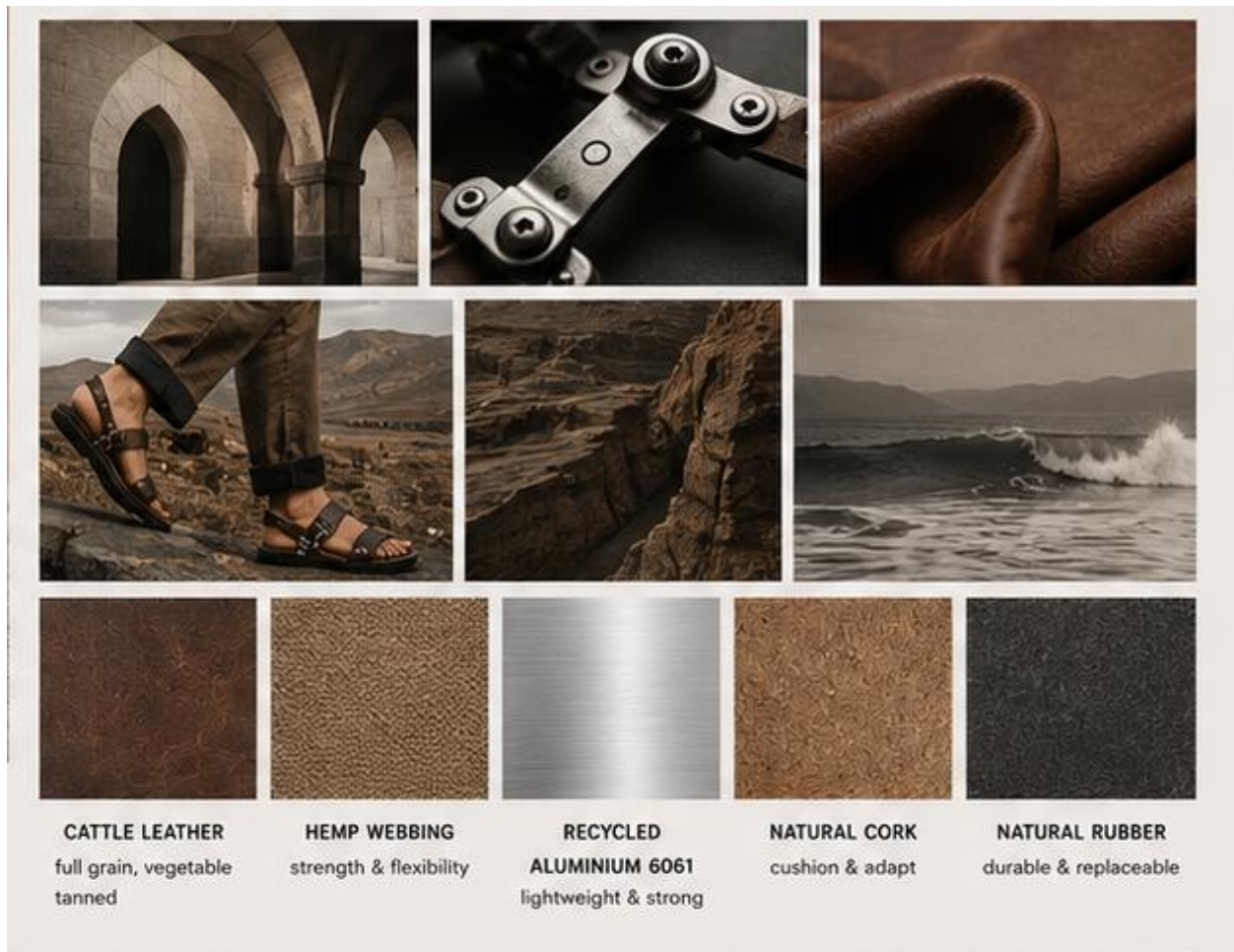


THE HINGE LOOP SANDAL

The Hinge Loop Sandal transforms footwear into a modular mechanical platform where a cattle leather upper is permanently retained while soles and structural components are replaceable through a visible hinge system. It separates wear cycles into distinct lifespans, allowing the user to continuously renew function without replacing identity. The design prioritizes repairability, transparency of construction, and material circularity through fully separable leather, metal, rubber, and natural fiber components.

MOODBOARD AND DESIGN STORYTELLING



MOOD AND MATERIAL LANGUAGE

DESIGN STORYTELLING



Every strap is made from full grain cattle leather with precision engineered hinge hardware. When a part wears out, that part can be replaced, not everything. Soles, straps, and even hardware can be replaced. With repair, it can last for over five years.

SKETCHES, TECHNICAL FLATS, AND SPECIFICATIONS

1. SKETCHES (DESIGN INTENT + FORM EVOLUTION)

Concept Sketch Direction 1 — “Structural Honesty”

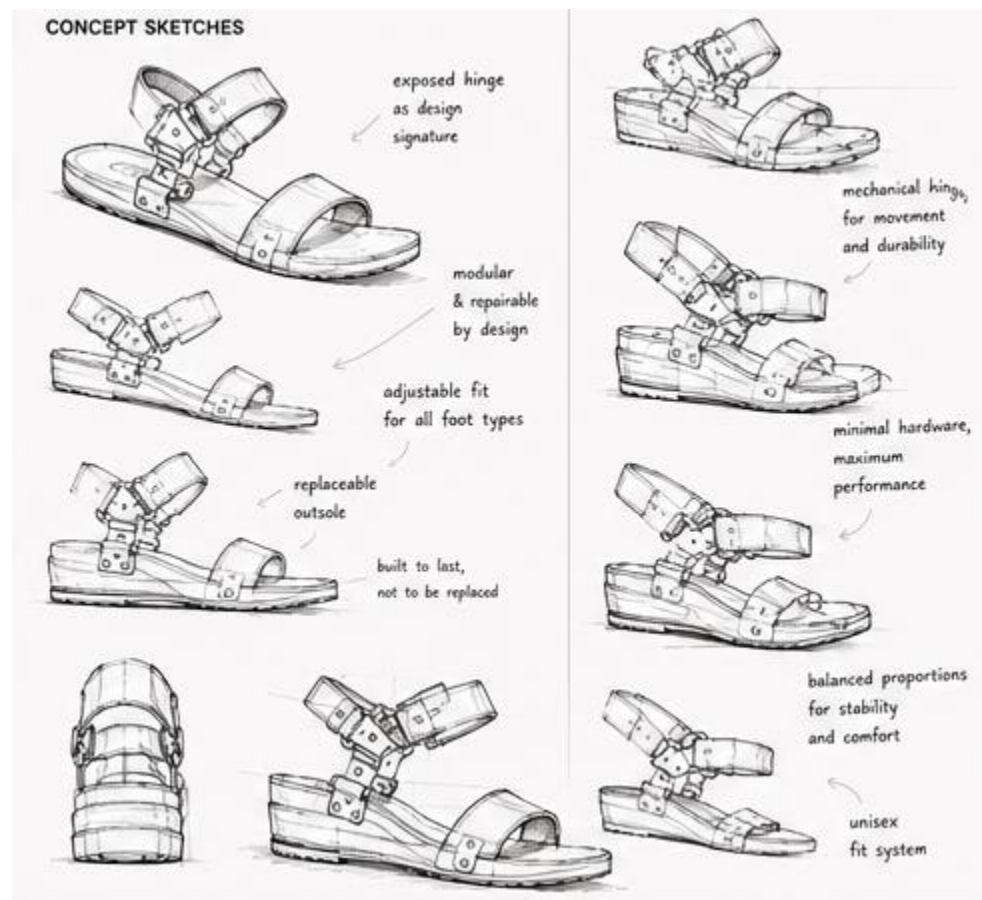
- Open mechanical hinge exposed on lateral side
- Leather straps mapped to stress zones (forefoot + instep)
- Heel-to-toe load clearly directed through wedge/flat base system
- Minimal decorative elements → function-first geometry

Concept Sketch Direction 2 — “Modular Repair Language”

- Upper shown detached from sole system
- Hinge unit illustrated as removable “spine”
- Strap system shown as replaceable segments
- Exploded sketch emphasizes serviceability

Concept Sketch Direction 3 — “Wear Evolution”

- Same sandal shown at:
 - new state
 - mid-life patina
 - repaired state with replaced outsole
- Visual aging is intentional, not hidden



2. **TECHNICAL FLATS (ENGINEERING CLARITY)**

SIDE VIEW

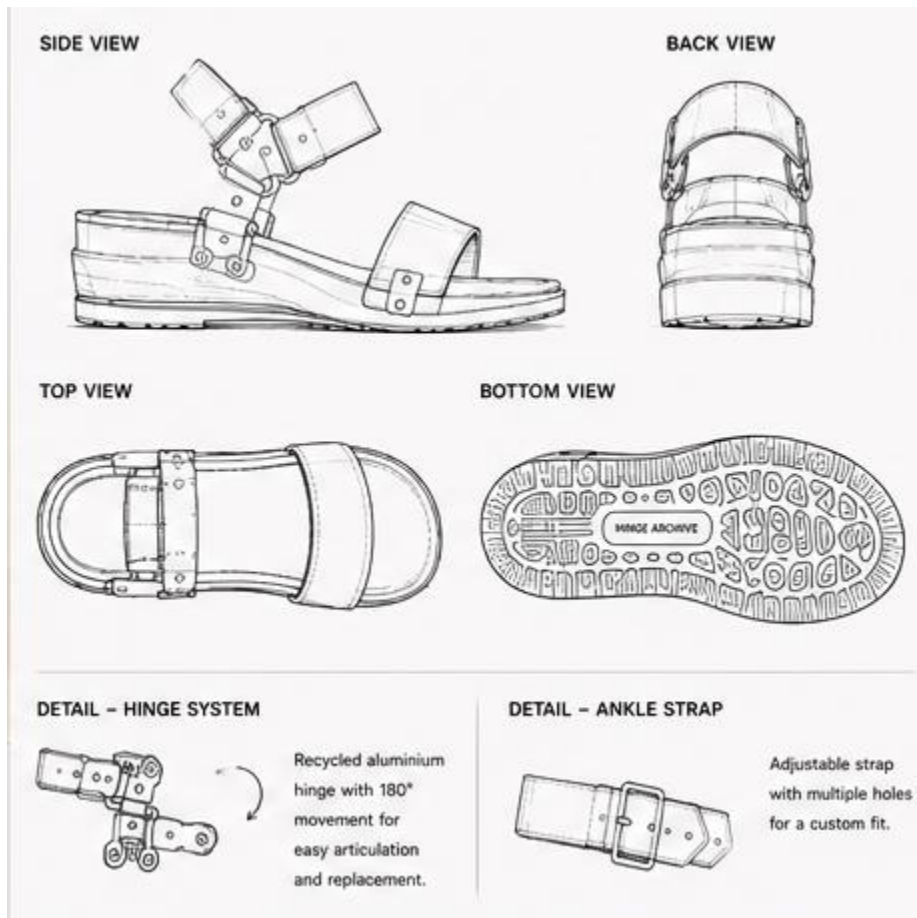
- Wedge/flat hybrid load path depending on edition
- Aluminium hinge axis located at mid-foot pivot point
- Leather upper anchored via riveted junction points
- Cork mid-layer integrated between upper and outsole system

TOP VIEW

- Dual-strap geometry:
 - forefoot stabilizing strap
 - mid-foot locking strap
- Symmetrical unisex proportion system
- Visible fastener points aligned to replacement zones

BOTTOM VIEW

- Natural rubber outsole segmented into replaceable wear map:
 - heel strike zone
 - forefoot push zone
- Non-slip tread pattern designed for long abrasion cycles
- Screw access points visible (repair-first logic)



EXPLODED VIEW

Layer order:

1. Vegetable-tanned cattle leather upper (identity layer)
2. Hemp reinforcement webbing (tension distribution layer)
3. Aluminium hinge frame (movement + structure spine)
4. Cork mid-layer (comfort + geometry stability)
5. Natural rubber outsole (consumable wear layer)
6. Stainless steel fasteners (disassembly system)



3. SPECIFICATIONS

Product Name

Hinge Loop Sandal — Unisex Edition

Category

Modular sustainable footwear system

Construction Method

Mechanical assembly system
(no permanent adhesives or bonded composites)

Materials Composition

- $\geq 50\%$ vegetable-tanned full-grain cattle leather (upper system)
- Recycled aluminium hinge structure (6061 grade)
- Natural rubber outsole (replaceable component)
- Cork midsole (biodegradable cushioning layer)
- Hemp webbing reinforcement
- Stainless steel fastening system

Functional Specifications

- Repairability: Full modular disassembly

- Service cycle: outsole replacement every 12–24 months
- Hinge maintenance: periodic tightening/inspection
- Expected lifespan: 8–12+ years with servicing

Ergonomic Design


- Unisex last (neutral foot geometry)
- Load-balanced wedge/flat hybrid structure
- Adaptive strap tension system

End-of-Life Strategy

Can fully be disassembled into:


- leather → reuse / secondary goods
- metals → recycling streams
- rubber → regrind cycles
- natural fibers → biodegradation

5. MATERIALS & COLOUR PALETTE




TAN LEATHER Warm & classic	DARK BROWN Earthy & rich	OLIVE CANVAS Strong & durable	CORK Natural & renewable	ALUMINIUM Matte & light	BLACK RUBBER Durable & recyclable
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MATERIAL HIGHLIGHTS



Vegetable tanned leather develops character over time.



Recycled aluminium for strength and lightweight.



Natural cork midsole for comfort and support.



Replaceable rubber outsole for long term use.

6. SPECIFICATIONS

Category	Unisex Footwear – Modular Sandal
Construction	Modular – Mechanical Assembly
Upper Material	Vegetable Tanned Cattle Leather
Webbing	Hemp Fiber
Midsole	Natural Cork
Outsole	Natural Rubber (Replaceable)
Hardware	Recycled Aluminium, Stainless Steel
Weight (Size 42)	Approx. 420 g (one sandal)
Heel Height	2.0 cm (flat profile)
Repairability	All parts replaceable
Lifespan Target	8 – 12+ years with proper care
Disassembly Time	< 10 minutes (full breakdown)

FULL MATERIAL LIST

Primary Material (≥50% by surface area)

- **Full-grain cattle leather (vegetable-tanned)**
 - Upper straps (load-bearing)
 - Foot interface surface
 - Structural skin layer

Secondary Structural Materials

Mechanical Structure

- **Recycled aluminium 6061 or 6082**
 - Hinge system plates
 - Pivot joints
 - Replaceable structural connectors

Fastening System

- **Stainless steel (A2 / A4 grade)**
 - Screws
 - Micro bolts
 - Removable assembly hardware

Wear + Comfort Layer (Replaceable Cycle Component)

- **Natural rubber (Hevea brasiliensis)**
 - Outsole (high abrasion component)
 - Fully replaceable sole unit
- **Cork sheet (natural, untreated or lightly bound)**
 - Mid-layer cushioning
 - Shock absorption interface

Textile Reinforcement

- **Hemp webbing**
 - Internal strap reinforcement
 - Load distribution under leather tension points

Optional Comfort / Fit Components

- **Natural latex foam (optional, minimal use)**
 - Footbed padding (must remain removable and non-bonded)

End-of-Life Compatibility

- Leather → secondary goods / repair reuse stream
- Aluminium → full industrial recycling loop
- Rubber → regrind / replacement cycle reuse
- Hemp/cork → biodegradation or composting (if uncontaminated)

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CHIMA GRACE: FASHION DESIGNER | SDG ADVOCATE

My work focuses on one central question: how can design move away from short-term consumption and instead create systems that last, adapt, and evolve with the user?

This led me to develop the Hinge Loop Sandal. What makes this project important to me is not only its material logic, but its shift in mindset. It treats footwear not as a final object, but as a long-term system of maintenance and identity. The more it is worn and repaired, the more personal it becomes.

The name “Hinge Loop” reflects this idea. The hinge represents repairability and structure, while the loop represents circularity—the continuous cycle of use, repair, and renewal rather than disposal. Alongside my technical exploration, I am also interested in how design can feel relatable and human. This sandal is not meant to feel industrial or distant. It is meant to be worn, lived in, and shaped by the person using it.

In a world driven by fast production and fast replacement, this project proposes a slower logic: value increases when something is maintained, not replaced.

This is not just a sandal. It is a system designed to stay in use.