

Ingenious Indigenous Details Case Study in Central Saudi Arabia

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Abstract. The article describes examples of ingenious indigenous details based on observations made during the last five years in Saudi Arabia's Central Region.

Vernacular architecture, including its indigenous details, reflect the severity of the climatic conditions, the scarcity of the materials of construction, or the social or religious restrictions.

Introduction

Vernacular architecture has evolved through many years, many generations and consequently through many trials and errors. The scarcity of materials and energy led to ingenious solutions in design which can be seen in micro as well as macro dimensions. Although such solutions may seem old-fashioned in this computer-aided design era, the idea, the approach, and the implementation of them are important.

The details presented in this-pap&r belong to the traditionally built houses of Najd, the central region of Saudi Arabia. The examples were taken from Diraiyah, Garaen, Sadous and Arqah, all sharing the same construction materials, the same hot arid climate, as well as same way of life and Islamic belief. Nevertheless, there are variations in settlement patterns and house designs due to topographic variations, scarcity of arable land, problems of **defence**, size, and other factors. The details that exist in one settlement might not **be** found in another.

The examples presented here are just a few from a multitude of interesting details.

Al Thormah

Al Thormah is a small peep-box projecting onto the street just above most of the main doors of traditional Riyadh houses (Fig. 1). It provides both security and privacy for the household, especially for the female members of the family. It served the

same purpose as the modern peep-holes. When there was somebody at the door, the woman in the house could look down through the small circular opening at the base of the box. She could also talk to the person below without being seen.



Fig. 1. "Al thormah" is located just above the main entrance

The Ladder

This particular ladder (Fig. 2) was seen in one of the evacuated houses in old Diraiyah, the first capital of Saudi Arabia. Despite the improvements of modern ladders, this design proves to be more stable and durable, and requires less material, effort, skill and time to construct.

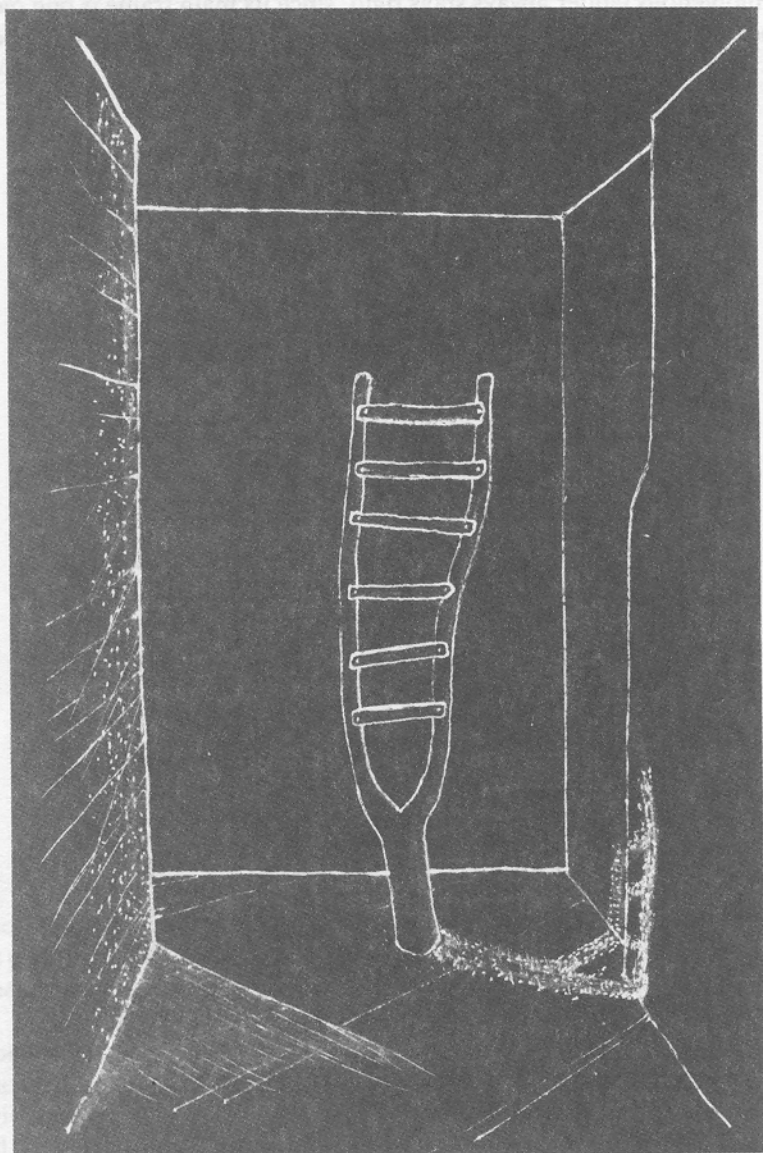


Fig. 2. This ladder can be easily used on uneven floors

The modern ladder touches the two planes at four points while the indigenous one touches them at three. As three is the minimum number of points needed to define a plane, you can easily use this ladder on any kind of surface, especially on uneven floors, as it will provide complete stability.

The indigenous ladder always stays rigid, since its main frame is one piece: the fork branch of a tree. Modern ladders can get loosened at the joints after a period of use. (Fig. 3)

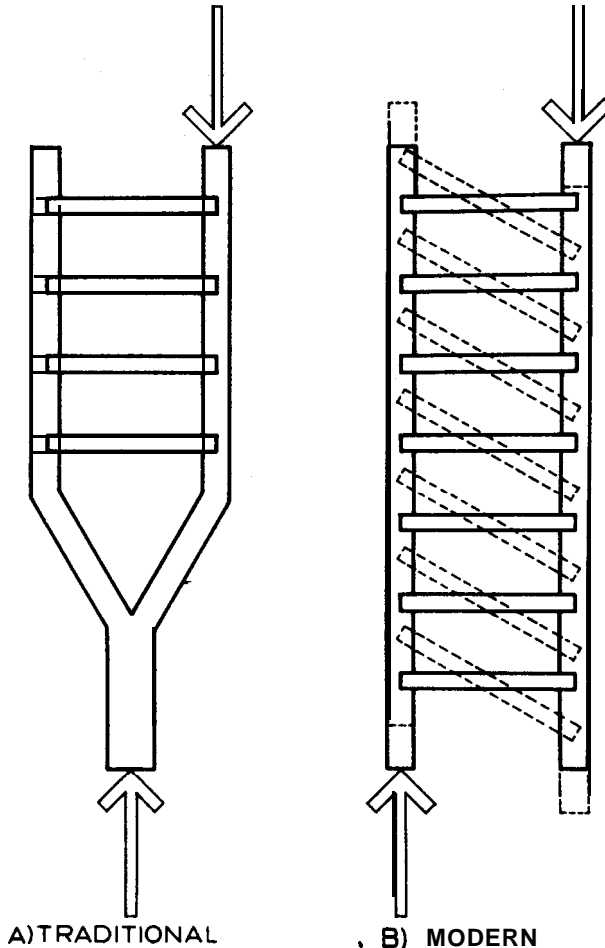


Fig.3. **Modern ladders get loosened at the joints after a period of use**

The Wooden Beams

Sometimes highly decorated with vivid colors in geometric patterns, the beams are made of trunks or branches of tamarisk (athel) trees. **As** a thick trunk is not always available due to the desert climate, the beams are usually constructed with two to six branches, either side by side or in layers on top of each other depending on the number of branches used (Fig. 4). The composite beam is lighter, stronger and safer than the single beam.

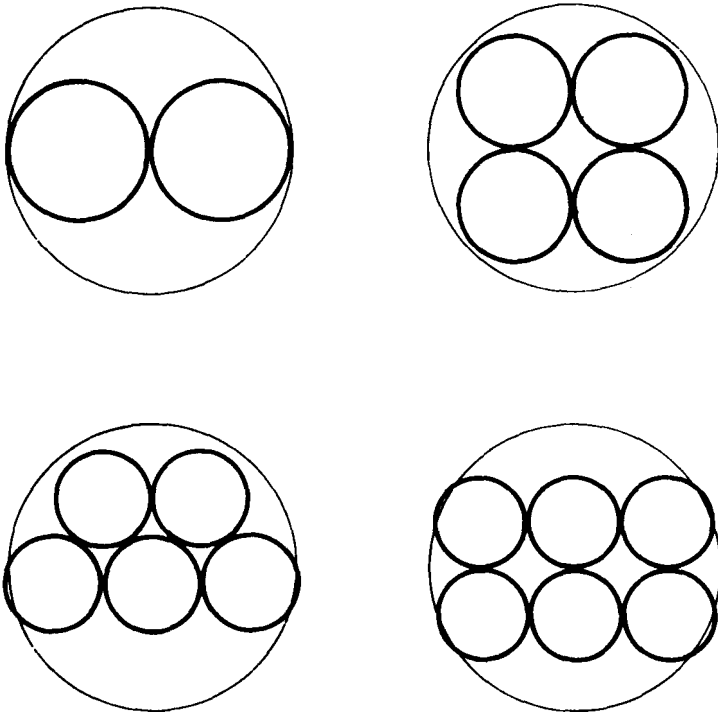


Fig. 4. **Wooden** composite beams. (Reference circle radius = **25cm**)

The important point to be mentioned is the configuration of the beam. The beam is positioned such that its middle part is bent upwards to provide more strength to the beam and a feeling of safety to the inhabitants (Fig. 5-6).

The Wooden Doors

The traditional houses have wooden doors and lintels, most of which are decorated with colored geometric patterns. The width of the door varies from 64 cm to 145 cm, and the height from 150 cm to 227 cm. They were made out of two different types of wood: tamarisk and palm tree. The ledges, braces, and stiles were made of

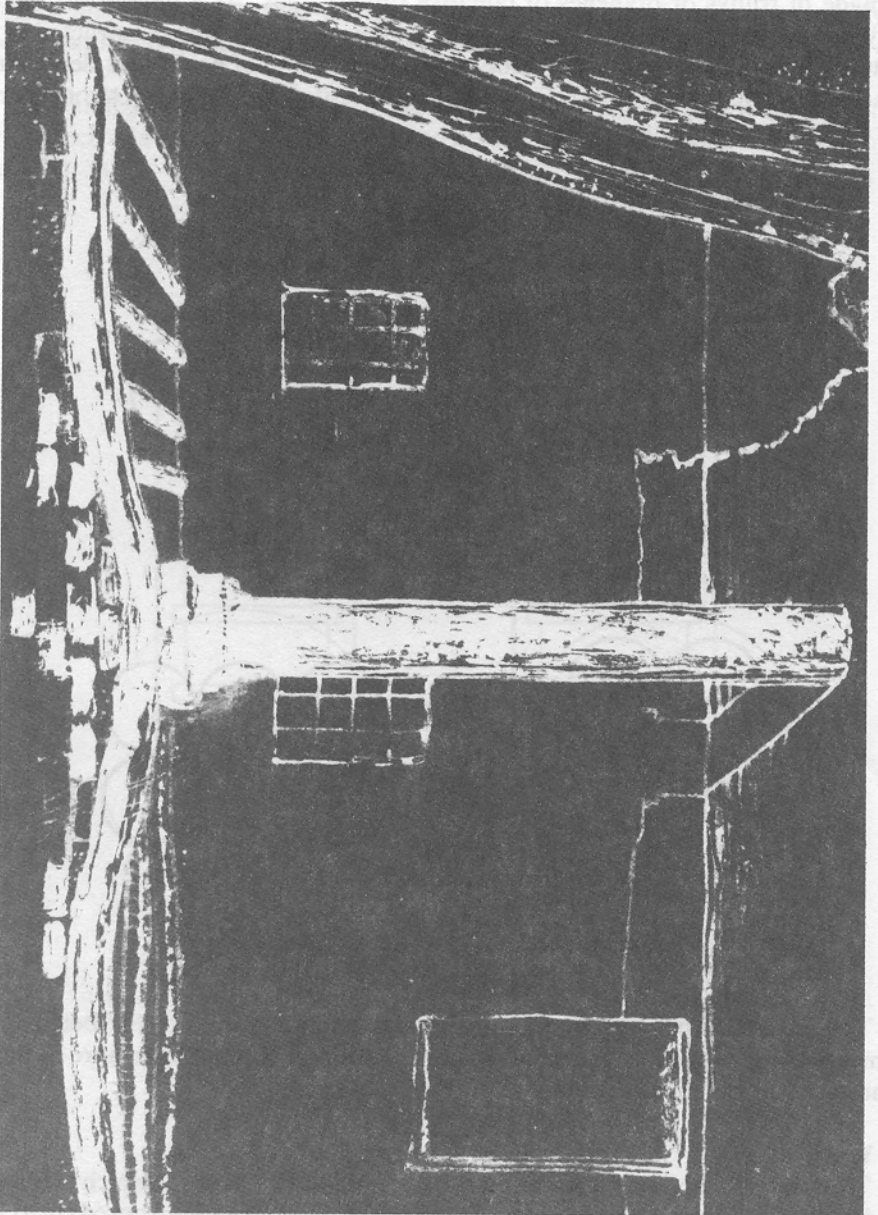


Fig. 5. The middle part of the beam is bent upwards to provide more strength to the beam

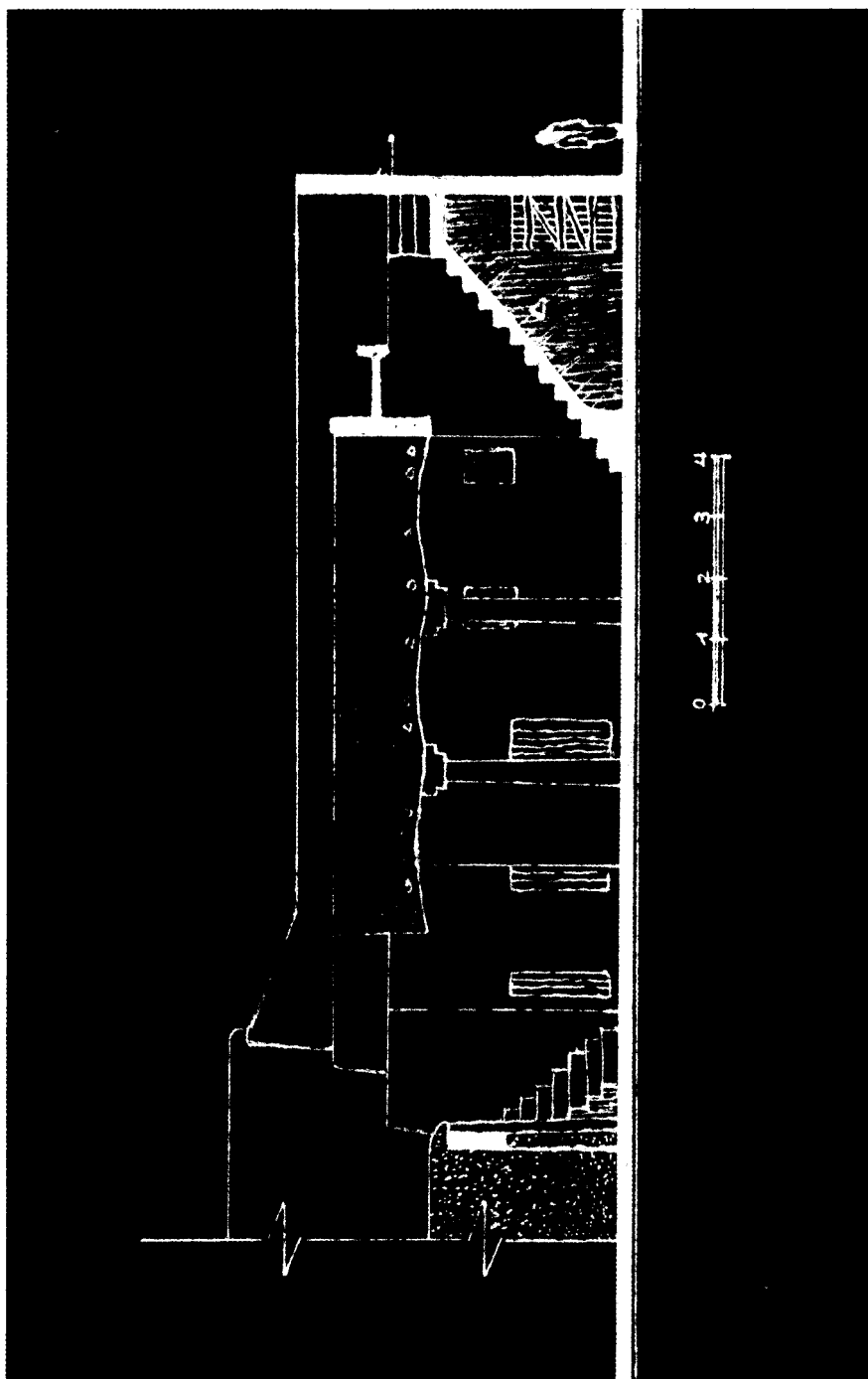


Fig. 6. Longitudinal section of a traditional house.

tamarisk, while the match boarding was of palm tree trunks. Thus, the stronger tamarisk formed the structural frame while the relatively lighter and more readily available palm tree was used as an inner fill. The thickness of the match boarding and styles was about 6 cm. One of the stiles projected on both ends, the upper one projecting beyond the top ledge and fitting into a socket in the door lintel, while the bottom one fitted into a stone socket. Thus, the door was pivoted at one side (Fig. 7).

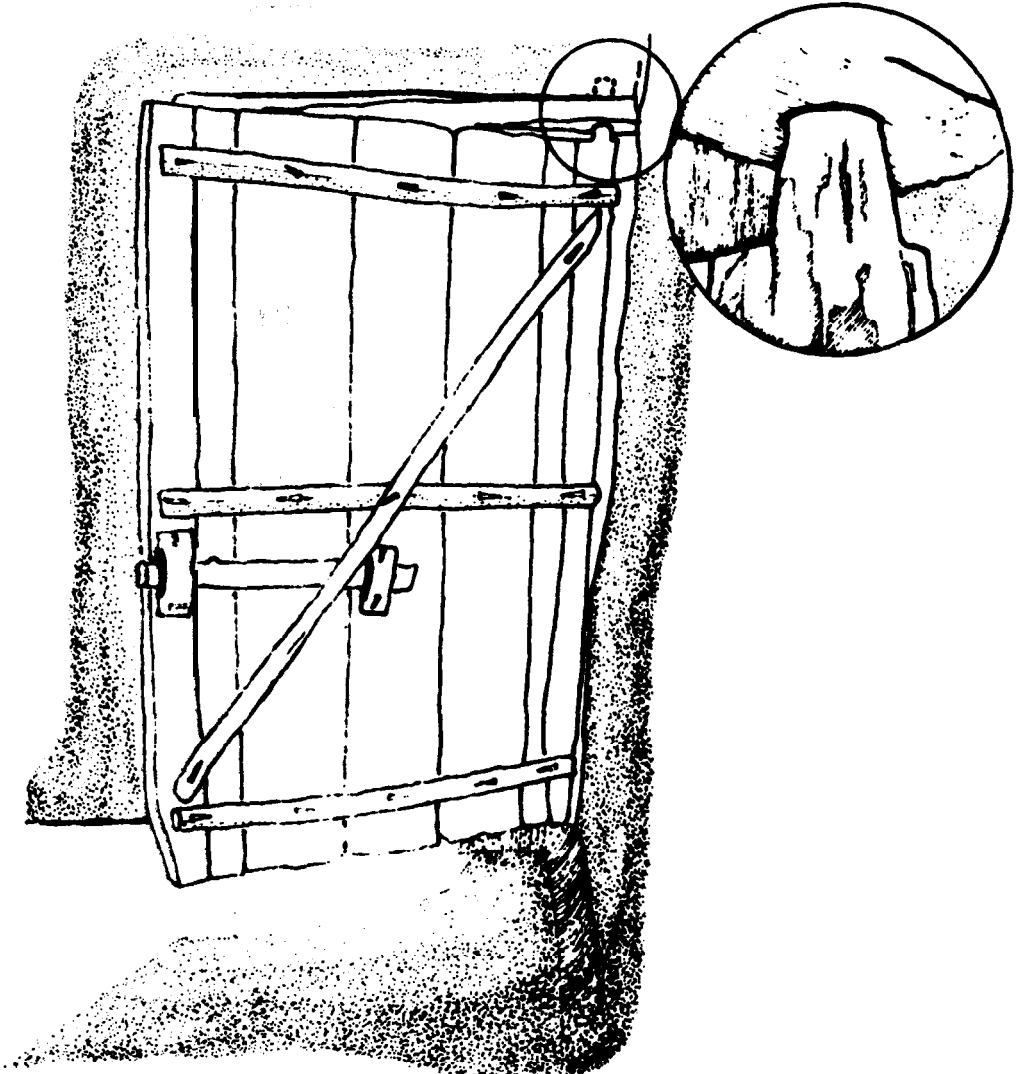


Fig. 7. A traditional door with a diagonal bracing. The inset shows in detail the upper part of the stile fitting into a socket in the door lintel

In most doors, one diagonal element was nailed to the match boarding to avoid sagging. Doors in Sadous showed differences in construction techniques. Instead of the diagonal bracing, they had a bunch of palm tree twigs (without the leaves) through the whole width of the door (Fig. 8). Around twenty to thirty twigs were pushed in through each hole until it was completely filled. The two horizontal bands of twigs gave strength and an aesthetic appeal to the door.

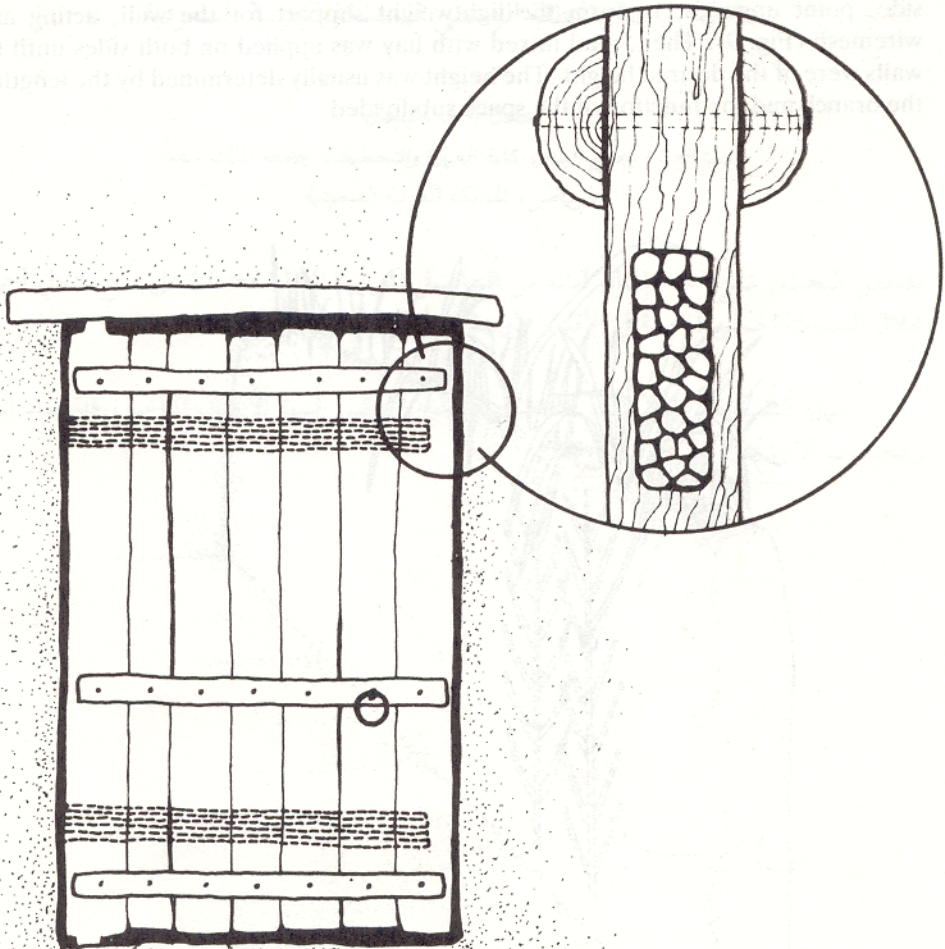


Fig. 8. The two horizontal bands of twigs were used instead of the diagonal bracing

Partition Walls

Sun-dried mud-bricks were the predominant materials for load-bearing walls, the thickness varying from 40-50 cm for the exterior and main walls, and from 30-40 cm for the interior and secondary walls.

The thin partition walls in Sadous utilized a different construction technique while providing the desired stability. The palm tree branches were placed **side-by-side**, point upwards, to form the lightweight support for the wall, acting as a **wiremesh** (Fig. 9). Then, mud mixed with hay was applied on both sides until the walls were of the desired height. The height was usually determined by the length of the branch and the function of the space subdivided.

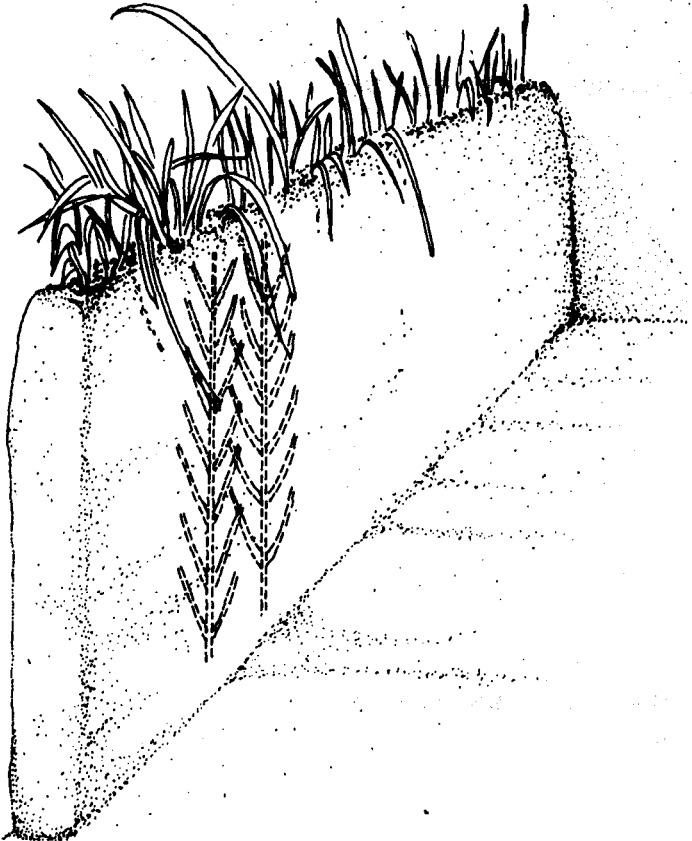


Fig. 9. A partition wall constructed with mud and palm tree branches.

التفاصيل المعمارية للعمارة التقليدية : دراسة خاصة بالمنطقة الوسطى للمملكة العربية السعودية

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ملخص البحث . تشرح هذه المقالة أمثلة من التفاصيل المعمارية المحلية معتمدة على مسح عملي أجري خلال السنوات الخمس الماضية في الأقليم الأوسط للمملكة العربية السعودية .

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