Mrudghatanam -Ecofriendly Fridge

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ABSTRACT:

Refrigeration is the process of creating cooling conditions by removing heat. It is mostly used to preserve food and other perishable items, preventing food borne illnesses. It works because bacteria growth is slowed at lower temperatures. In modern times, before the invention of the modern electric refrigerator, icehouses and iceboxes were used to provide cool storage for most of the year. In Indus Valley Civilization and are considered to have been used for cooling as well as storing water. The pots are similar to the present-day Ghara and Matki used in India and Pakistan. We have selected Amravati district in Maharashtra state to make this Mrudghatanam -Ecofriendly Fridge.

KEYWORDS:

Non-Electric, Mrudhghatnam, Refrigerator, Eco friendly, Fridge, Zeer Pot.

Introduction:

Refrigeration is the process of creating cooling conditions by removing heat. It is mostly used to preserve food and other perishable items, preventing food borne illnesses. It works because bacteria growth is slowed at lower temperatures. In modern times, before the invention of the modern electric refrigerator, icehouses and iceboxes were used to provide cool storage for most of the year. Placed near freshwater lakes or packed with snow and ice during the winter, they were once very common. Natural means are still used to cool foods today. On mountainsides, runoff from melting snow is a convenient way to cool drinks, and during the winter one can keep milk fresh much longer just by keeping it outdoors. The word "refrigeratory" was used at least as early as the 17th century. The first cooling systems for food involved ice. Artificial refrigeration began in the mid-1750s and developed in the early 1800s. In 1834, the first working vapor-compression refrigeration system was built. The first commercial ice-making machine was invented in 1854. In 1913, refrigerators for home use were invented. In 1923 Frigidaire introduced the first self-contained unit. The introduction of Freon in the 1920s expanded the refrigerator market during the 1930s. Home freezers as separate compartments (larger than necessary just for ice cubes) were introduced in 1940. Frozen foods, previously a luxury item, became commonplace. Methods for preserving food by cooling have been around for thousands of years, but the modern refrigerator is a recent invention. Refrigerators use a fair bit of energy, especially when they are running continuously in hot climates. But they also contain chemicals that readily absorb heat from the environment as they turn from being a cool liquid into a gas. As they transition back to liquid, they release the heat into the outside – either outside a building or outside a

fridge – before being cycled back to begin the cooling process again. A refrigerant is a fluid that is used in refrigerators, to take heat from the contents of a refrigerator and throw the heat out in the atmosphere. In the 20th century, HFCs (Hydro Fluro Carbons), CFCs (ChloroFluro Carbons) became the most popular refrigerants.

Domestic Refrigerators impact the environment in two main ways:

1. Indirect impact by consuming energy during use.

2. Direct impact from the release of gases used as refrigerants and in insulating foams (particularly F-gases). When these gases are released, either during use or when the refrigerator is disposed of, they can have direct impacts. 1) they damage the earth's ozone layer. Ozone is a component of an important layer of the atmosphere that protects the earth from damaging solar radiation. 2) the gases have a global warming effect from the gas being in the atmosphere. This impact is quantified as their GWP (Global Warming Potential) and some are several thousand times as potent as CO23) the refrigerants, if they are fluorinated and released to the atmosphere, decay to form long lasting substances harmful to the environment (such as trifluoro acetic acids and carbonyl fluoride).

Harmful consequences of ozone depletion for Humans: Increase in skin cancer, snow blindness, cataracts, Less immunity to infectious diseases like malaria. For plants: smaller size lower yield, increased toxicity. • For marine life: Reduced plankton. Juvenile fish, larval crabs, and shrimps. Due to the adverse effect of refrigerants used in the refrigerator, the environment is still getting polluted day by day. Conventional refrigerants deplete the Ozone layer by the emission of Chloro Fluro Carbons.

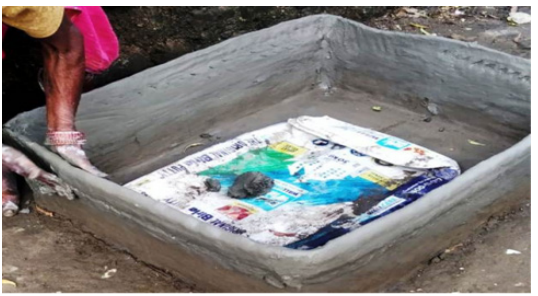
With the intention of zeroing the pollutants, the existing technology called evaporative cooling by the Zeer pot system has been adopted. The Zeer Pot system has a major disadvantage is that the surrounding air gets saturated at a point in time and the heat removal rate ceases. Many clay pots from around 3000BC were discovered in the Indus Valley Civilization and are considered to have been used for cooling as well as storing water. The pots are similar to the present-day G*hara* and *Matki* used in India and Pakistan.[2]However, in the Indian subcontinent, Ghara, Matka and Surahi, all of which are different types of clay water pots, are in everyday use to cool water.[4]

Procedure:

Believe it or not, with respect to the above consequences related to the environment, weneed a fridge to keep food, milk, vegetables, fruits fresh naturally for a longer duration, without the electric bill, minimum maintenance of cleaning. Nowadays it's our experience that some vegetables and fruits like Tomato, apple, lemons, cucumber, Orange, Banana, etc when we store in modern refrigerator, lose flavor and nutrient values within three days also develop undesirable texture and hence efforts are made by the authors/invitees to design the Eco-friendly, nonelectric, hygienic, low cost, easy cleaning, and maintenance Mrudghatanam (Clay Box) fridge, It made up of full mitty and becomes porous after complete baking at high temperature. It has modern and attractive appearance has storage capacity as per everyone' sneed, can be of any shape, size, with required number of shelfs and soil bowls of required size to keep vegetables curd, milk, fruits, mitty -water bottle etc. Some hooks are inside the Mrudghatanam for hanging jute bags with fruits or vegetables so that more and more space can be utilized for storage. A decorative door of jute which can be easy to handle and keep the fridge airy and dust free,

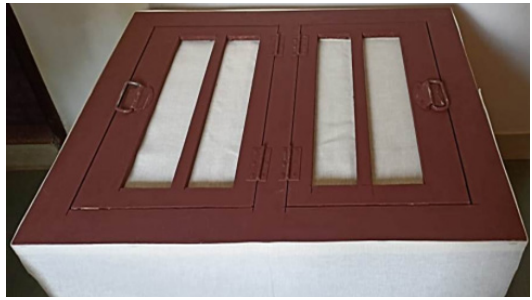
also it is washable. the whole Mrudghatanam is covered with pure porous jute cotton with a decorative patch work so that the fridge looks beautiful and it keeps airy and makes it attractive .If Mrudghatanam placed at ventilated space then it gives better results. it can hold on stand or can be used without stand. A 6 days experiment and observation of storing capacity of Mrudghatanam, revealed that the Mrudghatanam keeps the vegetable fruits curd, milk fresh for 5-6 days. The vegetable shopkeeper can used the whole Mrudghatanam as a safety vegetable storage for 5 to 6 days. It can be used to store dairy products by dairy owners.

Detailed drawing:



Construction of Natural Non electric Refrigerator

After Complete Baking



Upper Lid With Handle & The Four Sides of Mrudghata-nam Covered With Jute Cloth

Patchwork on cover make attractive and beautiful

Experimental observations:

After four days After 6 days

This product provides efficient cooling without electricity.

- Low cost ,Low maintenance
- Runs without electricity
- Modern design
- Naturally cool vegetables, fruits, Milk,Water etc.
- Very easy to use
- Variety of health benefits

Product Details:

Door	Single/Double Door
Shape	Rectangular
Width	66 cm
Length	78 cm
Height	18 Inches
Colour	Natural Brown
Volume	50 liter

Weight	8Kg
Budget	Rupees- 5000/-

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Conflict of interest:

The Authors have no conflict of interest to declare that they are relevant to the content of this article.