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Patent Search

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Abstract:

An innovative method to enhance the effectiveness of a solar air heater by improving flow distribution through the use of guide vanes and flow restriction techniques method ensures a fully developed and laminar airflow, resulting in improved heat transfer efficiency. The invention significantly enhances the drying process of perish agricultural produce, thereby extending their shelf life and adding value. The design includes glide vanes and perforated flow restriction devices strategically placed w duct to achieve optimal airflow distribution and heat transfer.

Complete Specification

Title of Invention
Enhancing Solar Air Heater Efficiency through Innovative Flow Distribution Techniques
Utilizing Guide Vanes and Flow Restriction Devices
Field of Invention
The present invention relates to the field of renewable energy technologies, specifically a solar air heater designed to generate hot air. This hot air is utilized for drying perishable agricultural produce such as fi'uits and vegetables, thereby significantly extending their shelf life and adding . value to these products.
Background of Invention
Traditional solar air heaters typically consist of an inlet cone, an absorber plate covered with glass, and an outlet cone. These heaters are powered by bléwers that supply air through an outlet pipe of up to 100 mm in size. The absorber plates, varying from 500 mm to 1500 mm in width, require an inlet diffuser, cone, or trapezoidal-shaped duct to direct the airflow effectively.
A major limitation in conventional solar air heaters is the discrepancy between the inlet and outlet sizes of the duct, leading to underdeveloped airflow at the inlet. This results in air

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