

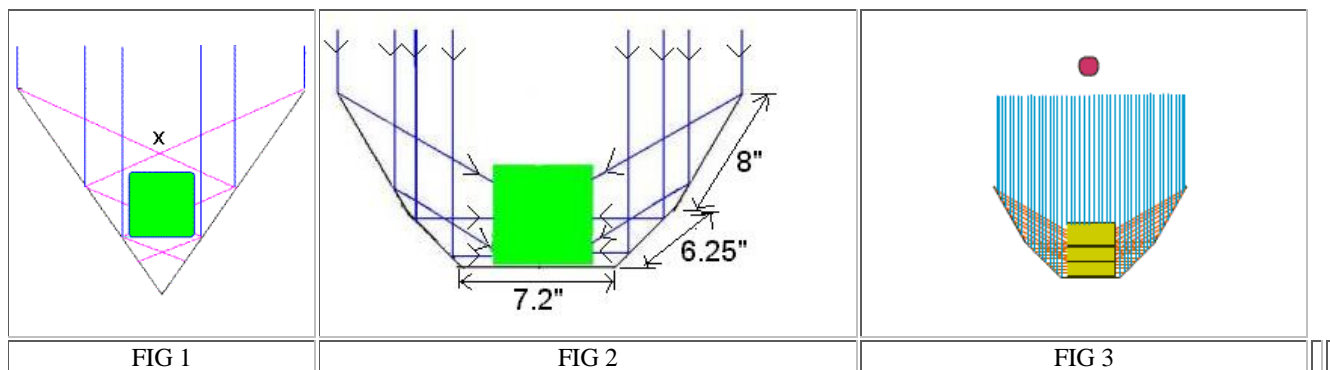
HOME	PARVATI COOKER	STACKED POTS	TWELVE SIDED	TEST RESULTS	COMMENTS
PHOTO GALLERY	SPANISH	SPANISH	SPANISH	NEW DEVELOPMENTS	

Shobha Pardeshi's Home Page

Dual angled funnel cooker :Parvati Solar Cooker

First of our project is " Low Cost Solar Cooker ". For this we selected Funnel Cooker by [Dr. Steven E. Jones](#) While our experiments were being carried out we had found out that stacking of pots works better than placing them side by side in funnel cooker. See these results [here](#). Hence we considered the total size of stacked cooking pots as 6 inches dia. And 6 inches height.

We decided to improve this design. From the drawing we decided on a meeting point of Sunlight that are reflected from the rim of the cone. (Point 'x' in figure1). The second cone of 90^0 was started from this level(The reference for this was taken from Prof. Mann's (1981) improvement to VITA design). The length of 90^0 cone section was taken as 6.25 inches. The base was closed and made reflective, so that any sunlight passing from sides of cooking pot is reflected back. The diagram of this with sunlight reflection is shown in Fig 2. From the diagram concentration of sunlight on cooking pot is clearly seen. This cooker is useful for unattended cooking. Reflections of sunlight with respect to position of Sun for -60 minutes to +60 minutes is shown in fig 3. We had used pressure cooker cooking pots in stacked position with plastic cover. Opening diameter of this cooker is 24 inches. Basically this is a dual angle funnel cooker. We have Named it as 'Parvati Solar cooker'.



How to make and use Parvati Solar Cooker

Construction of Parvati low cost Parvati solar cooker is given below

As explained earlier Parvati Solar Cooker is Modified Funnel Cooker. This is made out of three sections. The reflector part is made out of cardboard. Stainless steel sheet also can be used as it is more durable We have constructed two types a) Circular type b) Twelve sided type Construction of circular type is given here and twelve sided version is given at [Next page](#).

Design of Parvati Solar cooker: (Circular type)

Circular Parvati Solar cooker is made of three sections. Part C forms the upper section. Part B forms the lower section and part A forms the base of the cooker. How to cut these three parts from a single sheet of cardboard or aluminum or stainless steel sheet is shown in Fig 4 . Detailed dimensions for 24 inch diameter cooker are shown in Fig 5. This collector can collect heat energy equivalent to about 300 watts. For higher

energy diameter of 30 , 36, 48 or higher can be used. For these sized collectors multiply the given dimensions by 1.25, 1.5 or 2 respectively.

Part C is semicircle shaped. Outer radius is 24 inches and inner radius is 16 inches. Join two end of this semicircle to form the upper section of cone.

Part B has outer radius of 12 inches, next circle is of radius 11.3 inches and third circle of radius 4.8 inches. Part B is 255 degrees section of circle. Join two end of this section to form the middle section of cone. Part B has collar space to join it to Part C.

Part A is base of the structure. It is made of circle of radius 4.0 inches. There is another circle seen inside with same center. It's radius is 3.6 inches. This collar space is for joining the base to part B. The construction is shown Fig 6

Construction Tips: Small V-cuts are to be made in collar space of Part B and Part A. Then bend these V-cuts on inside. This will make it easy to join together the parts together this is shown in Fig 6. To make the structure sturdy and durable we have pasted brown paper on external surface of the cooker. After pasting the paper we have found the structure became stiff and does not need any support.

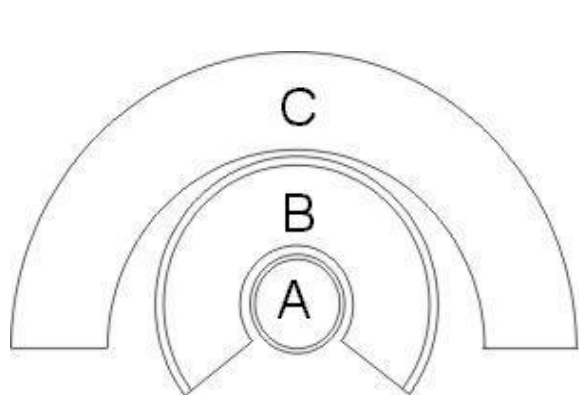


FIG 4

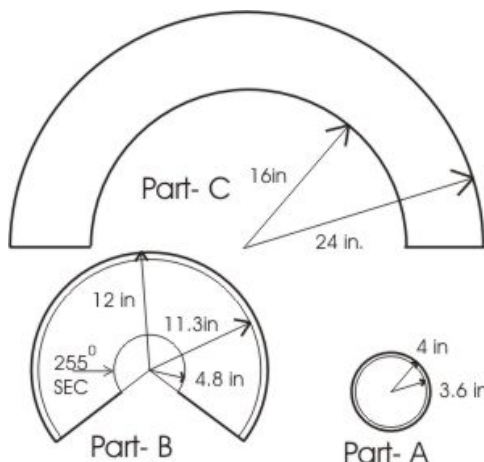
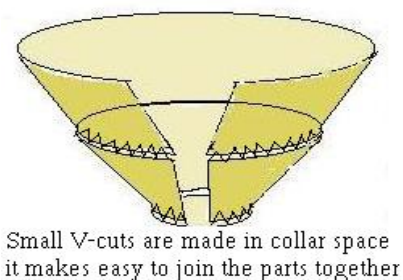


FIG 5



Small V-cuts are made in collar space it makes easy to join the parts together

Fig 6



Three sections are cut from the cardboard



Join two ends of part 'C' to make upper part of the cone



Join two ends of part 'B' to make lower part of the cone



Join all three parts to form the reflector



Paste aluminum foil or other reflective surface



Completed reflector

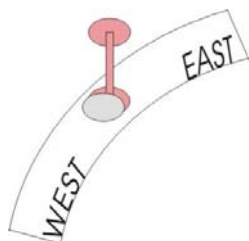


Reflector, Cooking pots, Stands, Plastic cover

Using the PARVATI Solar Cooker:

Since Parvati solar cooker is modified version of funnel cooker it's use is identical. We have used a metallic stand to place the conical reflector. Another small tripod stand is used to place the cooking pot. As stated earlier we are using three pots in stacked position to cook the food. To retain the heat plastic cover is used. Instead of directly placing the plastic cover a small metallic stand is made and plastic bag is fitted on that. This cover is sufficiently big so that it does not touch the cooking pots. An arrangement is made for focusing. Instead of focusing pin we have made simple arrangement. On a small metallic plate fixed to the rim of reflector a Nut bolt of 1/4 inch diameter and two inch long is fixed with two round washers at two ends. When the cooker is properly focused shadow of upper washer coincides with the washer on the metal plate. As

shown in figure while focusing it is better to adjust position in such a way that shadow of upper washer is slightly on the west so that sun tracking error is taken care of.



Focusing Arrangement



While focusing, shadow of upper washer adjusted towards west



Stacked Cooking pots



Small stand is placed at bottom of the reflector



Stacked pots are placed on the stand



Plastic Cover is put on for green house effect



Left for cooking for about 90 minutes

Using Cooking pots in the Stacked Position

Sometimes it is necessary to cook multiple dishes. We in India generally have Rice, Curry, a Vegetable and Rotis. We have successfully cooked Rice, Curry and a vegetable (Potato and Cauliflower) in this cooker. Time taken for cooking was 90 minutes. Bread pudding was also made. While cooking multiple dishes we placed Rice in lower pot, Curry in middle pot and Vegetables in upper pot. The food items that need more heat and time

