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Construction guide

Principles and use of the solar cooker

The solar cooker has been developed by Mr. J. Dierkx, in Ermelo, the Netherlands in 1982. It has been adjusted for The Recycle Centre (Het Kringloopcentrum) in Sliedrecht, the Netherlands. The technical drawings have been made by Mr. A. de Kluiver in 1994.

The design of J. Dierkx is different from other designs for solar cookers because his design will create a hot air circulation within the (solar) cooking box. This because:

- A. The glass cover is inclined, the box being higher at the rear.
- B. The bottom is somewhat lower in the front.
- C. The grate on the bottom, with the lathes from the front to the rear. This enables the hot air to flow underneath the cooking pans.
- D. The reflecting plate does direct the sun-rays towards the sloping front part of the inner box, which causes an additional warming up of the circulating air.
- E. Seal the bottom of the glass steam tight with rubber strip rubber tape and clench this tightly to the box with butterfly-nuts (wing nuts) or fasteners.

Inner box

Preferably made from thin metal. Solder the seams. Using loose, separate sides use a flange of 1,5 centimeters, pop nails , put SILLICONENKIT in the seams and edges and cover the metal on the inside with silver paper (heatproof). Cover the metal with dull black paint in order to absorb the sun-rays.

Isolation

Either use glass wool, stone wool, raw cotton or wool, or feathers (fluff).

Outside box

Use light materials so the cooking box can be easily moved. For safety it is recommended to paint the outside white, so that the box will be noticed at night.

Reflecting plate

This is needed for **4 reasons**:

1. To catch more sun-rays and direct them to the box.
2. To determine the time that the food will be ready. The reflecting plate can be put in three different positions, in this way it is possible to stipulate the time that the sun will enter the cooking box.
3. By putting the reflecting plate down, the glass cover will be protected during rain and at night.
4. To keep the food warm for a long time. When the reflecting plate is put down the food will cool down only 15 degrees Celsius per hour.

Cooking with the solar cooker. some advice

The cooking box is fit for cooking with water, milk etc. It is not fit for frying or baking pancakes!

When the cooking box is preheated the food will be ready 15 minutes earlier.

It is better to use two small cooking pans instead of one big pan.

To improve the heat transfer and therefore the cooking, some spoonfuls of water can be added in the box so to create steam.

Cooking pans and lids should be black.

The pans are heated from all sides. Therefore the food can not get burnt, and it is not necessary to stir the food. Lifting the glass cover during the cooking means that a lot of heat will escape from the box. The food will cool down and will take longer to get ready. Therefore it is recommended to put all the necessary ingredients in the proper amounts in the pans from the start.

Foe-foe and Oekali is some kind of porridge from water thickened by starch. To make this type of food first bring the water to boil, than add the starch and other ingredients, stir and place back in the cooking box.

For many dishes it is recommended to put a grate in the pan (this is not the grate in the box on which the pans stand) to steam the food ready.

Warning When ready the food should be eaten. To warm up the food for a second time can be dangerous.

Are you using one of our solar cookers? Please send your reactions and information about the results to us.

Construction order

Start with the glass cover of the box, no. 1 and 2. Fix no. 3, 3a and 4 onto this. Mention the sloping side of 3. Subsequently fix the three-ply wood plates no. 8 onto 3 and no. 9 onto 3a.

Next step is to assemble the frame of the box from 2 pieces of no. 5, 2 pieces of no. 6, 2 pieces of no. 7 and no. 10 and no. 11. Then the sides, no. 12.

Now assemble the metal inner box steamtight (Silicon-kit). Add isolation and close the box with bottom sheet no. 19 (+20). Put together the glass cover (13+14). Then 15 and 16 the lowest glass sheet (25) fit up steam tight (silicon kit) with 24. upper spout with adhesive tape and locking plate 22 with adhesive tape opened some centimeters to air out. Fit up the rubber seal (18) and fix it to the box with hinges (21). Fit up the casement stay 26 and no. 27 with accessories. If possible the side of the reflecting plate facing the box could be rounded a little with lathes. This way more sunrays are directed towards the box. To protect the box when it rains, the reflecting plate has to be closed. To increase this protection above no. 8 and ever the hinges 37 a piece of plastic can be fitted.

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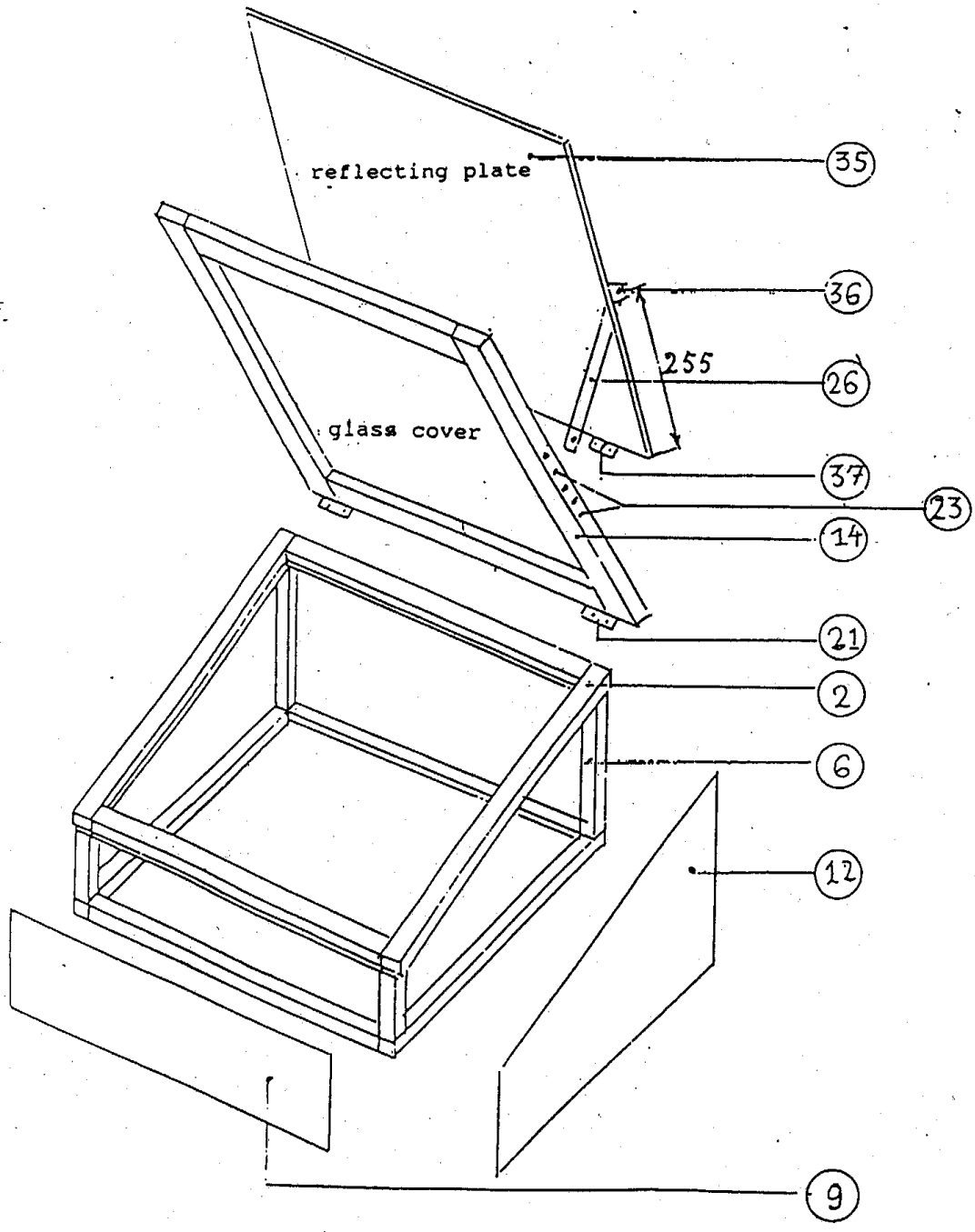
Materials (in mm) and order of construction of the solar cooker

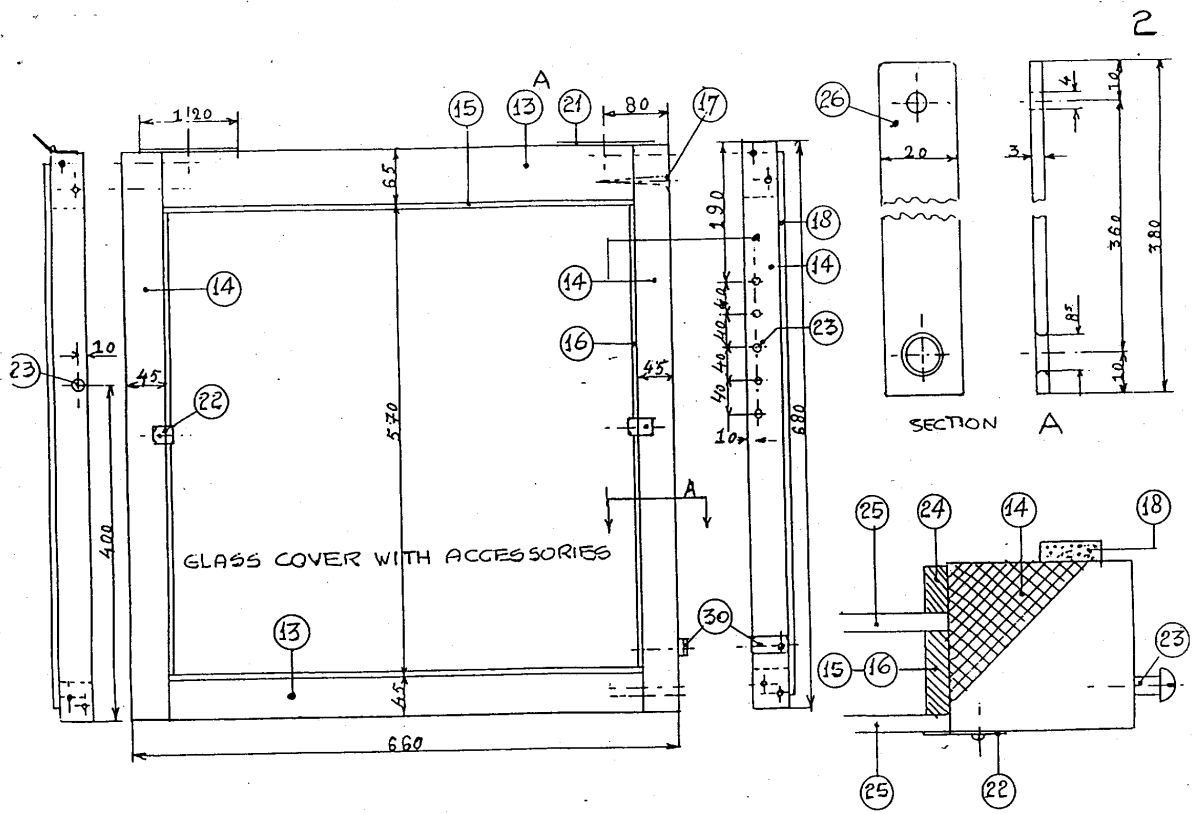
Legenda: mm= millimeters 10 mm=1 centimeter(cm) = 0,3937 inches (in) 12 inches = 1 foot

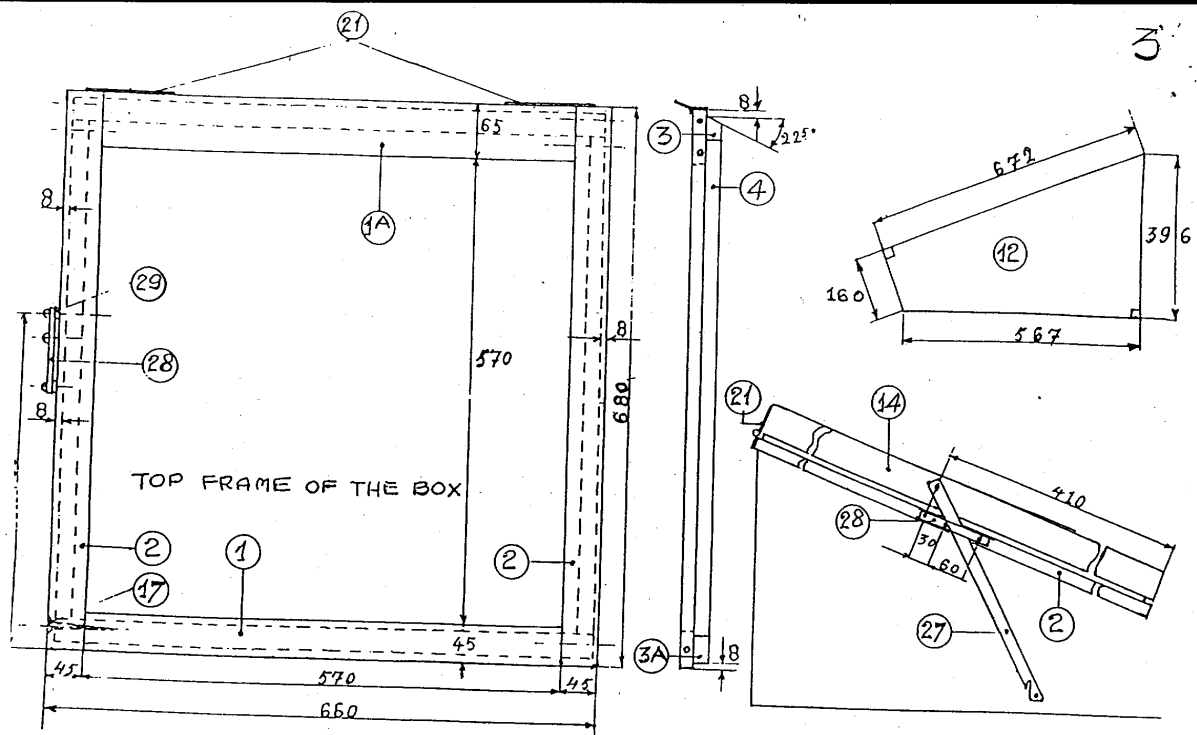
Type	size	Numbers	Drawing	descr
1	570-45-18	1 piece	page 3	upper glass of the glass cover
1a	570-65-18	1 piece	page 3 en 4	upper glass of the glass cover
2	680-45-18	2 pieces	page 3 en 4	upper glass of the glass cover
3	644-30-18	1 piece	page 3 en 4	upper glass of the glass cover
3a	644-35-18	1 piece	page 3 en 4	upper glass of the glass cover
4	599-19-19	2 pieces	page 3 en 4	upper glass of the glass cover
5	114-19-19	2 pieces	page 4	frame of the cooking box
6	343-19-19	2 pieces	page 4	frame of the cooking box
7	570-19-19	2 pieces	page 4	frame of the cooking box
8	644-396-4	1 piece	page 4	three-ply wood back of box
9	644-160-4	1 piece	page 4 en 1	three-ply wood front 017 box
10	606-19-19	1 piece	page 4	frame of the cooking box
11	606-19-19	1 piece	page 4	frame of the cooking box
12	see drawing	2 pieces	page 1 en 3	three-ply wood side of box
13	570-45-40	1 piece	page 2	glass cover
13a	570-65-40	1 piece	page 2	glass cover
14	680-45-40	2 pieces	page 2	glass cover
15	570-20-6	2 pieces	page 2	slot of glass cover
16	558-20-6	2 pieces	page 2	slot of glass cover
17	screws	12 pieces	page 2 en 3	countersunk 5/70
18	seal rubber	260 mm	page 2	under glass cover
19	bottomsheet	639-559-4	page 4	three-ply wood.
20	640-20-20	2 pieces	page 4	underneath the bottomsheet
21	piano hinge 20/20	2 pieces	page 2	2 pieces of 120
22	locking plate 20-25-1	2 pieces	page 2	for upper glass sheet
23	round head screws	4/25	page 1 en 2	determine position of refl. plate
24	glass lathes 100-8-6	8 pieces	page 2	-
25	glass 4 mm thick	2 pieces	page 2	565/565
26	steel sheet 380-20-3	1 piece	page 2	casement stay reflecting plate
27	steel sheet 376-20-3	1 piece	page 3 en 5	casement stay glass cover
28	steel sheet 98-10-2	1 piece	page 3 en 5	groove no. 27
29	distance tube	2 pieces	page 3 en 5	groove no. 27
30	steel sheet 40-10-2	-	page 5	saddle for no. 26
31.	steel sheet 170-15-3	1 piece	page 5	-
32	metal 3 mm around	3 pieces	page 5	390 length grate at the bottom
33	lathes 310-7-13	6 pieces	page 5	for grate at the bottom
34	blank inner box	-	page 6	mat.: tin, white iron or aluminium
35	reflecting plate 660-610-4	-	page 1	made of three-ply wood
36	lath of refl.plate 660-20-20	1 piece	page 1	for assembling 26
37	piano hinge 20/20	2 pieces	page 1	2 pieces of 80, to assemble 35

Immediately after painting the reflecting plate white, cover the inside with silver paper. Avoid wrinkles. fastener in order to clench the glass cover to the top of the box Straps, 2 pieces of about 820 mm length each.

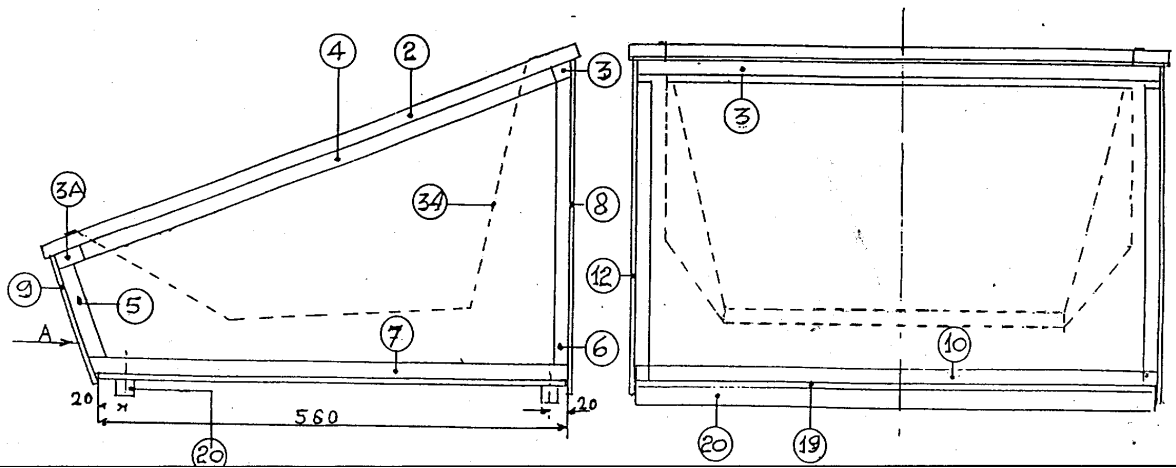
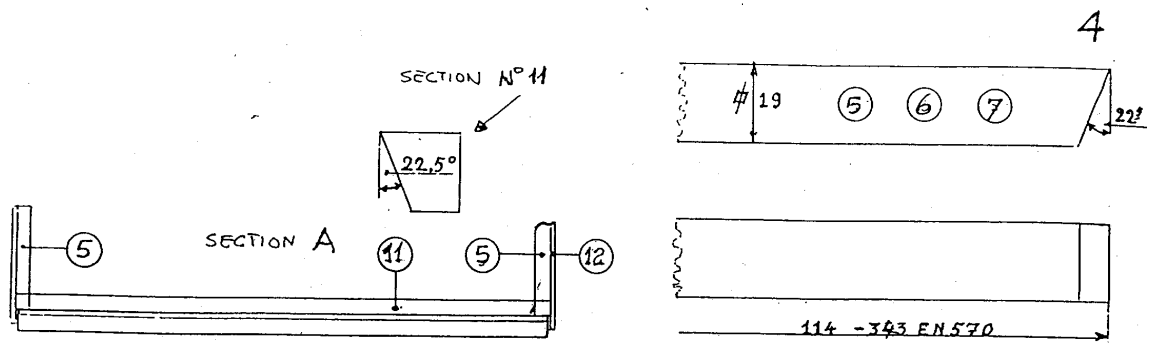
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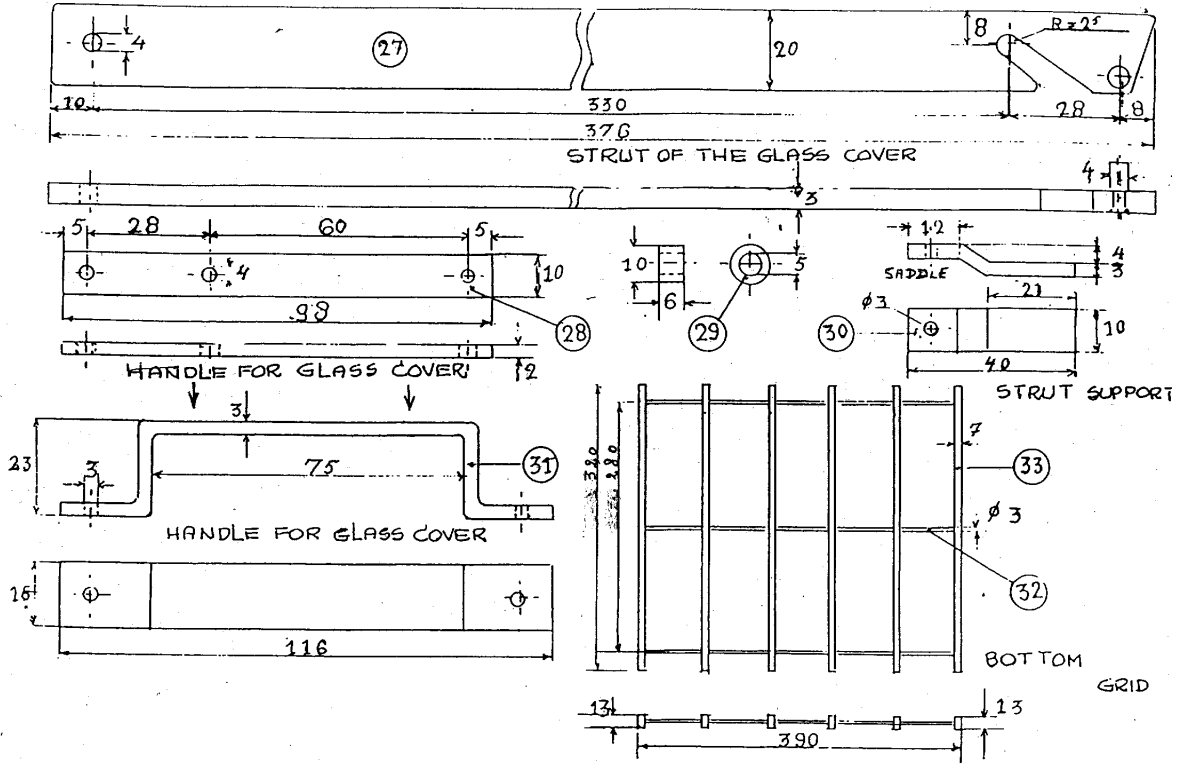






EXPANDING SYSTEM OF THE GLASS-COVER





6 (six)

