

USING THE SUN TO MELT WAX

How to construct a Solar extractor
in the home workshop described by

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The use of solar wax extractors is once again becoming popular particularly with the beekeepers in the warmer parts of the North Island.

There is nothing new in this method of obtaining beeswax from cappings and/or old combs. Solar heat is used in many different ways and this form of heating is cheap and efficient.

Beeswax has a melting point of approximately 140°-150°F. The temperatures in a well-made solar extractor will reach over the 200°F mark in sheltered positions.

The advantages of a solar extractor is that no slumgum is present in the melted wax and discolouration is kept to a minimum because there is no water to be contaminated with residues and propolis from the combs and frames.

Another advantage is that old or damaged combs as well as scrapings of burr combs from the tops and sides of frames can be dealt with daily, and not kept for off-season handling. If old combs are kept for too long they become a breeding place for wax moth and eventually if left too long, will be reduced to a worthless mass.

Directions for making the extractor of which there are five parts are:

1, Body of extractor, 2, The lid, 3, A large pan in which the cappings or combs are placed. 4, Small pan to catch melted wax and honey. 5, Basket made of heavy gauge 2-3- or 4 mesh hardware cloth to use in the pan when cappings are melted.

The wire mesh basket is placed in the large pan with a sufficiently large piece of muslin for straining, and the cappings or combs in the wire basket.

As the wax melts it is strained through the muslin cloth into the large pan and then directed through an opening into the smaller pan or mould.

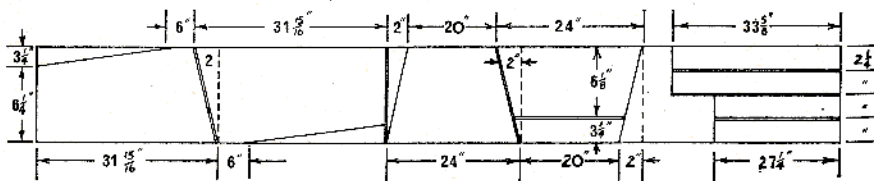


Fig. 1. Layout of the components used for making the wood frame of the solar extractor.



Fig. 3. Solar extractor with lid raised showing components in position.



Fig. 2. Cappings can be seen on the muslin strainer in the wire mesh baskets. In the foreground is a cake of wax from a previous melting.

MATERIALS NEEDED TO MAKE EXTRACTOR

(a) One board (well seasoned) $1\frac{1}{16}$ " thick, $9\frac{1}{2}$ " wide and 12' long. (b) $6\frac{1}{2}$ ' of tongue-and-groove. (c) 36' of timber $\frac{1}{2}$ " square. (d) Two pieces of timber $1\frac{1}{16}$ " x 2" x 15". (e) Two pieces of 24oz glass each approximately 32" x $25\frac{1}{2}$ ".

(Glass should be cut to fit the frame for the lid after this has been nailed together and checked to make sure it is the correct size.)

(f) One piece of 24 gauge galvanised iron $26\frac{3}{4}$ " x $28\frac{1}{2}$ ". (g) One piece of 24 gauge galvanised iron $12\frac{3}{4}$ " x $28\frac{1}{2}$ ". (h) Wire cloth, 2-3 or 4 mesh $26\frac{1}{4}$ " x 27". (i) Approximately 3 dozen 2" No. 8 screws. (j) Black paint, nails, etc.

The body and most of the lid of the extractor are made from the 12" board, laid out and cut into pieces as indicated in the drawing in Fig. 1.

Double lines on the drawing indicate where a saw cut should be made since pieces on both sides of the cut are to be used.

Side pieces for the body of the extractor are fastened on the ends of the two pieces cut to form ends, fastened with screws. The four edges formed on the top and bottom of the box are not even because of the sloping side walls. These edges are planed until all four are level with the ends of the box.

The bottom of the extractor is made from tongue-and-groove timber. The body of the extractor must be carefully squared before any of the boards are nailed on the bottom and be kept square since the lid will not fit if the body is not square. The two long wedge-shaped pieces left over from cutting the side boards are cut off at their thin ends so they will be $21\frac{1}{2}$ " long. They are nailed inside the box on the bottom (see fig. 2). The piece left over in cutting the narrow end of the box fits on the bottom in the space at the end of the wedges (fig. 2) and is nailed to the ends of the two wedges. Three small wedge-shaped pieces, each 4" long are cut from the scraps. The wide end of each wedge should be $1\frac{1}{4}$ " while the other end comes to a point. These pieces are also nailed to the bottom as indicated (fig. 2). They are intended to keep the small pan level.

The cover or lid is made from the two pieces of glass and the four $2\frac{1}{2}$ " strips, shown in fig. 1. These four $2\frac{1}{2}$ " strips should be dovetailed at the corners then nailed together to form a frame for the glass. If dovetailing is not possible two of these four pieces should be cut $25\frac{5}{8}$ " long to compensate.

The corners could be strengthened by corner plates if necessary. After the frame is nailed together, one set of $\frac{1}{2}$ " square pieces is nailed around the inside of the frame at a distance of $9\frac{1}{16}$ " from the top of the frame. Two $\frac{1}{4}$ " holes are then bored through the top and two through the bottom ends of the frame through the $\frac{1}{2}$ " strips. Each hole is bored 5" from the centre of the frame. The holes provide ventilation between the layers of glass and reduce the condensation of water in this space, and should be bored before the glass is placed in the frame. The glass is held in place with the $\frac{1}{2}$ " square strips, six of them cut $24\frac{11}{16}$ " long and six cut $32\frac{1}{16}$ ". They are cut to fit snugly inside the frame for the lid in case a timber of a different thickness is used. One piece of glass is placed above the $\frac{1}{2}$ " strips (already nailed in the frame) and is held in place with a second set of strips. The second piece of glass is placed below the $\frac{1}{2}$ " strips and is held in place with a third set of $\frac{1}{2}$ " strips.

The extractor will last longer if the wood from which it is made is treated against rot before being assembled.

It would be desirable to also make sure that the lid fits over the body of the extractor before the glass has been placed in position. Putty may be used on the top of the cover, in the same manner as for a window sash to make it water-proof.

Legs are attached to the rear of the extractor to keep the rear end about 14" off the ground. The legs are made from the two 15" strips nailed to the body of the extractor after a wedge shaped piece 4" long is nailed to the top. The wedges keep the legs perpendicular.

The pan for the combs or cappings is made from the larger sheet of metal, and is $21\frac{3}{4}$ " x $23\frac{1}{2}$ " and $2\frac{1}{2}$ " deep. The top is made $\frac{3}{4}$ " wider and $\frac{1}{2}$ " longer than the bottom to provide slanting sides. The lower end is cut back on both

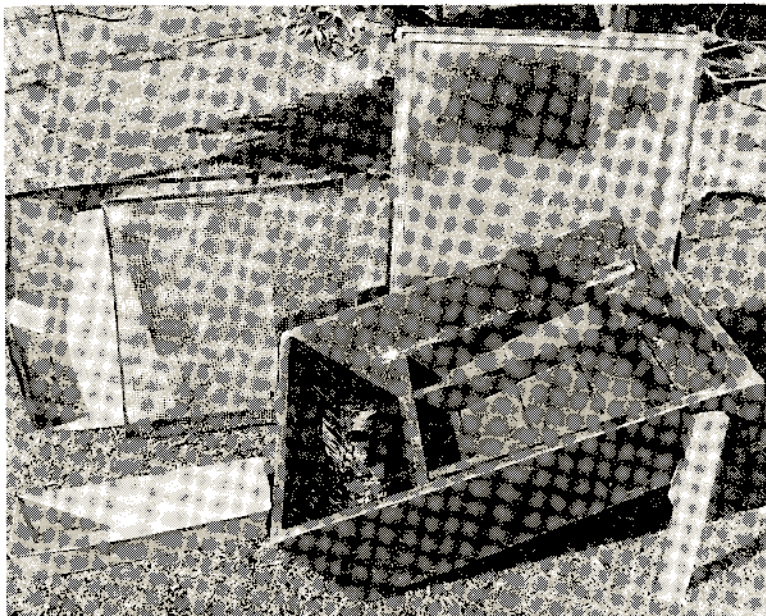


Fig. 4. Body, glass lid, metal tray, wire mesh and wax tray.

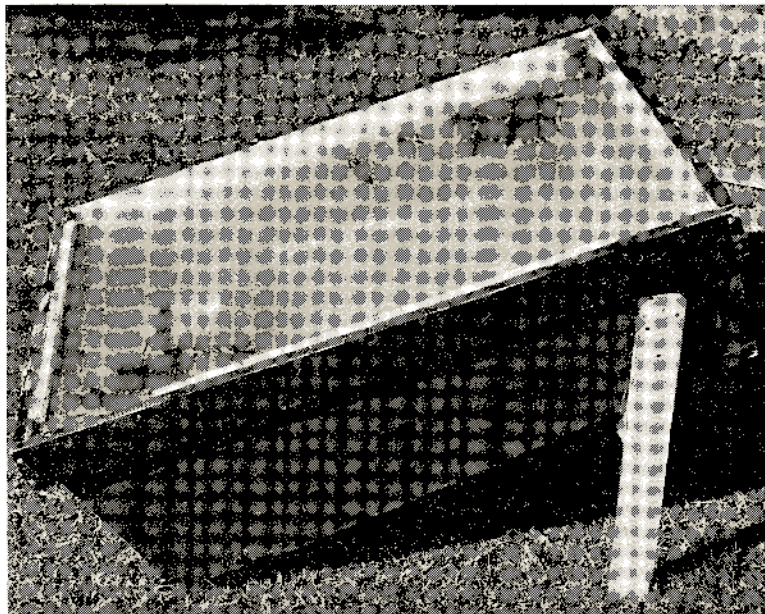


Fig. 5. Completed solar extractor ready for the sun.

sides so that the sides are 1½" shorter than the centre which makes the front of the pan slope from the sides to the centre (see in photograph). This arrangement permits the melted wax to run toward the centre of the pan, through an opening, which is cut 2½" wide, into a smaller pan placed below the larger.

The pan in which the wax and honey from cappings collects is made from the smaller sheet of galvanised iron. This pan measures 4¾" wide by 20" along the top and 3¾" deep.

It is made ½" narrower on the bottom than on the top. This allows the cakes of wax (when cooled) to come away freely from the pan. One ½" of the top edges of this pan is turned out, down and then hammered flat. This pan may be too large for small quantities of wax so it would be advisable to make a second pan 4" wide by 10" long.

Cappings can be rendered more efficiently if placed on a basket made from the hardware cloth. The basket is placed on the large pan. It is made 21½" wide x 22" long x 2½" deep. A piece of fine cheesecloth placed in the basket strains the honey and wax before they flow into the smaller pan.

If a basket of this type is not used, the partly melted cappings have a tendency to flow down the pan and over the edges before they are entirely melted. Old combs, however, do not flow in this way so could be placed directly on the metal tray.

The solar wax extractor should be placed in a protected location—preferably facing north and should, if possible, be away from the prevailing winds.

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