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2,760,482

SUN-OPERATED HEATING DEVICES

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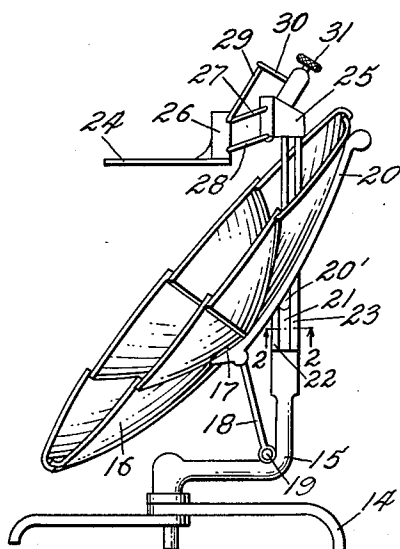


FIG. 1.

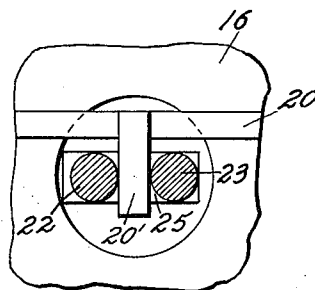


FIG. 2.

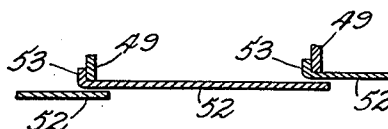


FIG. 4.

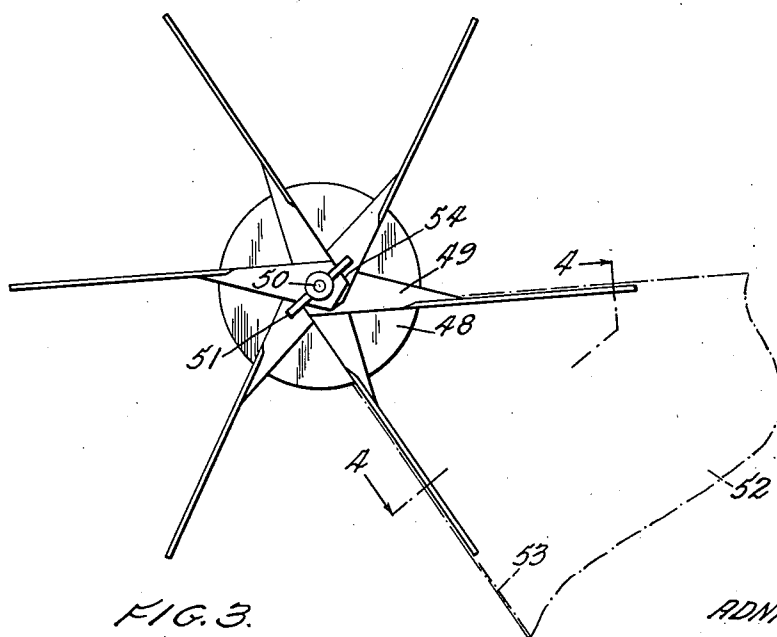


FIG. 3.

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SUN-OPERATED HEATING DEVICES

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6 Claims. (Cl. 126—270)

My invention has for its object improvements in sun-operated devices in order to make use of solar heat, as, for instance, for cooking purposes.

According to my invention, my improved solar heating device includes a reflector comprising, for instance, a parabolic mirror and a carrier for the material to be heated, the reflector being mounted on an arrangement that is shiftable with reference to said support, whereby the zone of concentration of the solar rays may always be shifted by the reflector within the limits of the area carrying the material to be heated.

The reflector may be mounted on a system of levers which provide for a shifting of the reflector with reference to the carrier of the part to be heated, the reflector and the carrier being pivotally secured to a common supporting spindle.

The carrier of the material to be heated is preferably shiftable with reference to the zone of concentration of the solar rays so as to allow adjustment of the heating through movement of the material to be heated within this concentration zone.

The reflector may also comprise a series of sectors. The sectors of the reflector may be secured together through a fastening of the tips of the sectors as provided through a central flange.

These sectors may also be pivotally secured to a spindle so that they may expand to form the reflector or be folded into inoperative position.

The sectors may furthermore include means for moving one sector by engagement with another whereby said sectors may open after the manner of a fan.

I will now describe with further detail a preferred embodiment of my invention, reference being made to particular embodiments thereof given by way of example and illustrated in accompanying drawings in which:

Fig. 1 is a side view of an arrangement according to my invention.

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1.

Fig. 3 is a bottom view illustrating the arrangement for securing the sectors forming the reflector.

Fig. 4 is a cross-section taken along the lines 4—4 of Fig. 3 and viewed in the direction of the arrows.

Fig. 1 is a partly sectional view of a heating device carried on a stand 14 inside which pivots the lower vertical end of a bent rod 15 carrying at its upper end means for supporting the part or material that is to be heated.

The mirror comprises a series of parabolic elements or sectors 16 secured to a central flange member 17. Said central member is pivotally secured to a connecting rod 18 that is in its turn pivotally secured at 19 to the bent rod 15. A control handle 20 for the mirror is rigid with the central flange member 17. This handle includes a stud 20' which slides in a space 21 provided between two sections 22 and 23 forming the upper end of the rod 15, as will be seen in Fig. 2.

The mirror returns the reflected sun rays onto the part to be heated on which they are thus concentrated, whatever may be the movements of the mirror under the control of the handle 20 and the consequent pivotal movement thereof with reference to the stand 14. For adjusting the intensity of heating, the carrier 24 for the part or material to be heated is pivotally secured through means including a deformable link motion constituted by the upper end 25 of the bent rod 15, a member 26 rigid with the actual carrier 24 and two parallel arms 27 and 28.

A system of pivotally secured arms 29 and 30 that is controlled by a screw-operated device 31 provides for the desired shifting of the carrier 24.

Fig. 3 shows a bottom view of the arrangement carrying the sectors of the mirror. This arrangement includes a flange 48 on which the arms 49 may rotate coaxially round the axis 50 of a screw. A winged nut 51 engaging said screw allows locking the arms 49 in position.

Each arm is rigid with a sector 52 of the mirror and each sector is constituted by a parabolic element and a flange 53 secured to an arm 49. This arrangement allows folding the sectors 52 over one another fanwise as shown in the cross-section of Fig. 4.

In order to further the opening of the fan-shape arrangement of sectors, one of the arms 49 may carry along with it the following arm automatically, for instance through the agency of a flange 54 bearing against a portion of the following arm 49.

The manner in which the sections are bolted together may be also accomplished by any other suitable arrangement, as, for example, the arrangement shown in U. S. Patent No. 2,513,961.

Obviously my invention is by no means limited to the embodiments described hereinabove, which embodiments may include detail modifications without unduly widening thereby the scope of the invention.

What I claim is:

1. Heating apparatus comprising, in combination, a base; a post having a lower end portion mounted on said base for turning movement about a vertical axis, said post extending upwardly from said base; support means mounted on said post for supporting an article to be heated; and a parabolic mirror pivotally supported only by said post for turning movement about a horizontal axis, said mirror being formed with a cut away portion through which said post extends and being formed from a plurality of sector-shaped segments each extending from the center of the mirror to the outer periphery thereof.

2. Heating apparatus comprising, in combination, a base; a single post mounted on said base and extending upwardly therefrom; support means mounted on said post for supporting an article to be heated; and a parabolic mirror pivotally supported only by said post for turning movement about a horizontal axis, said parabolic mirror being made up of a plurality of sector-shaped segments each extending from the center of the mirror to the outer periphery thereof and said mirror being formed with a cut-out through which said post extends.

3. Heating apparatus comprising, in combination, a base; a post having a lower end portion mounted on said base for turning movement about a vertical axis, said post extending upwardly from said base; support means mounted on said post for supporting an article to be heated; and a parabolic mirror pivotally supported only by said post for turning movement about a horizontal axis, said parabolic mirror being made up of a plurality of sector-shaped segments each extending from the center of the mirror to the outer periphery thereof and said mirror being formed with a cut-out through which said post extends.

4. Heating apparatus comprising, in combination, a

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base; a crank-shaped post having two arms and having a lower end portion mounted on said base for turning movement about a vertical axis, said post extending upwardly from said base; support means mounted directly on said post for supporting an article to be heated; and a parabolic mirror pivotally supported only by said post for turning movement with respect to said support means about a horizontal axis located approximately at the intersection of said arms, said parabolic mirror being made up of a plurality of sector-shaped segments each extending from the center of the mirror to the outer periphery thereof.

5. Heating apparatus comprising, in combination, a base; an elongated post extending upwardly from said base and being mounted thereon for turning movement about a vertical axis; a carrier, for carrying an article to be heated, mounted only and directly on said post; and a reflector independent of said carrier and being mounted on said post for turning movement with respect to said carrier about a horizontal axis, said reflector comprising a plurality of sector-shaped segments each extending from the center of said reflector to the outer extremity thereof and being slidable with respect to each other about the center of said reflector so that the latter may be collapsed when the heating apparatus is not in use.

6. A heating apparatus as defined in claim 5 and

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wherein said carrier has a flat horizontal supporting surface to support an article to be heated in a horizontal position.

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