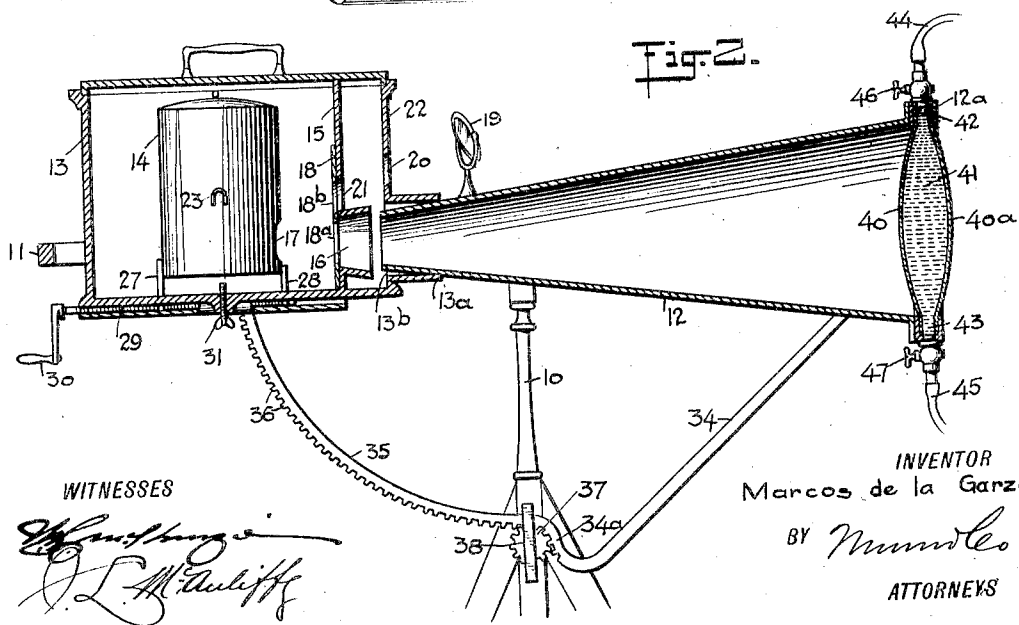
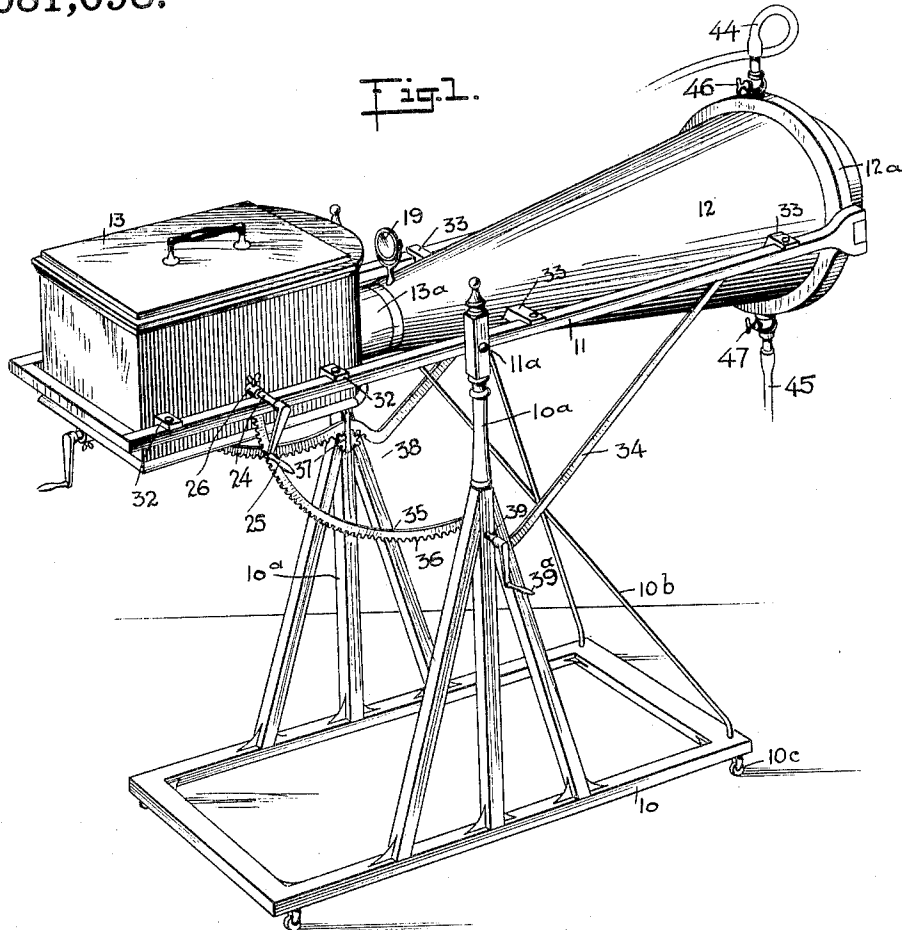


M. DE LA GARZA.
SOLAR HEATING APPARATUS.
APPLICATION FILED JAN. 18, 1913.

1,081,098.

Patented Dec. 9, 1913.



UNITED STATES PATENT OFFICE.

MARCOS DE LA GARZA, OF EL PASO, TEXAS.

SOLAR-HEATING APPARATUS.

1,081,098.

Specification of Letters Patent.

Patented Dec. 9, 1913.

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To all whom it may concern:

Be it known that I, MARCOS DE LA GARZA, a citizen of the Republic of Mexico, at present residing at El Paso, in the county of El Paso and State of Texas, have invented a new and Improved Solar-Heating Apparatus, of which the following is a full, clear, and exact description.

My present invention is designed more particularly as an improvement on the apparatus forming the subject matter of United States Letters Patent No. 696,326, granted to me March 25, 1902, although features of the present invention are not limited for use with the patented apparatus referred to.

It is a design of my invention to provide an improved lens, and an improved means for adjusting the frame carrying the lens, lens tube, and a casing to contain a heater or other apparatus.

The invention will be particularly explained in the specific description hereinafter to be given.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the views.

Figure 1 is a perspective view of a solar-heating apparatus embodying my invention; and Fig. 2 is a vertical longitudinal section.

In constructing the illustrated apparatus a base frame 10 is provided with standards 10^a braced by cross braces 10^b to prevent spreading, and between said standards an approximately horizontal frame 11 is pivoted at a point between its ends, as at 11^a. The base 10 is provided with wheels 10^c whereby it is adapted to be turned to dispose the frame 11 in various directions in a horizontal plane, while the said frame 11 is mounted to rock vertically.

Within the frame 11 a lens tube 12 is supported, carrying at its forward end a lens frame 12^a, and the opposite end of the lens tube is received in a nipple or socket 13^a at an opening 13^b in the casing 13, which may contain a heater 14 adapted to receive a cooking utensil or any other article or substance to be heated. The casing 13 is provided with a transverse partition 15, having an opening therein defined by a conical flange 16 in axial alinement with the lens tube 12, and an opening 17 also in axial alinement with the lens tube is formed in

the heater 14. If desired, a cut-off slide 18 may be arranged in connection with the partition 15, and having an opening 18^a adapted to register with the opening in the partition 15 at the flange 16.

A mirror 19 is mounted on the lens tube 12, and openings 20, 21, are formed in the adjacent side 22 of the casing 13 and in the partition 15, so that the mirror will reflect the inner portion of the heater 14 at the opening 17, that the user may observe the direction of the light rays and adjust the apparatus accordingly. The cut-off slide 18 has an opening 18^b which registers with the opening 21 in the partition 15.

The heater 14, as in the patent referred to, is provided at each side with a lateral, arched hanger or trunnion 23, each of which rests on the end of a journal 24, one of which has a crank handle 25, there being sleeves 26 on the sides of the casing 13 through which the journals 24 pass. The arrangement is such that the vessel 14 may be permitted to rock on the journals 24, so that said vessel will remain upright when the lens tube is tilted. Any suitable additional stops may be provided for holding the heater 14 in adjusted position. The devices shown are similar to those shown in the patent referred to and are not herein claimed. Thus posts 27, 28, are suitably fitted in the bottom of the casing 13, their lower ends being so connected to a shaft 29 that the shaft will turn relatively to said stops, but will move the latter longitudinally, the shaft being provided in practice with a suitable crank handle 30. A set screw 31 may be provided in the bottom of the casing 13 to engage the bottom of the heater 14. To connect the casing 13 with the vertically rocking frame 11, any suitable means may be employed, as for instance, brackets 32, there being similar brackets 33 for holding the lens tube 12 in the frame 11.

To rock the frame 11 on its pivots for adjusting the lens tube to receive the sun's rays, I provide said frame 11 with depending bars 34, one at each side of the frame, said bars being connected at their front and rear ends with the frame at the front and back of the center of movement of the latter. The rear end of each bar 34 is in the form of a sector 35 that curves rearwardly and upwardly from about the center of the bar, and may be provided with teeth 36, meshing with which are rollers 37, which

also are shown as toothed. The essential function of the rollers 37 is that of rests to support the bars 34, 35. A keeper 38 at each roller 37, guides the sector 35 of each bar 34. A set screw 39, having a crank handle 39^a serves to hold the bars 34 in adjusted position, after having been manually moved to vary the angle of the lens tube 12. At the forward terminal of the sector 35 each bar 34 is formed with a downward bend or drop 34^a, which presents a shoulder that acts as a stop, limiting the movement of the bar.

In the lens frame 12^a, a hydrolens is fitted, consisting of glass sides 40, 40^a, the lens in the illustrated example being bi-convex, there being a space between the said glass front and back for containing a body of water 41. The lens is provided with a water inlet 42 preferably at the top, and with a water outlet preferably at the bottom of the lens. There is connected with the inlet 42 a flexible pipe 44, and with the outlet 43 is connected a flexible water escape pipe 45, and cocks 46, 47 are provided to regulate the flow of the water. In practice the supply pipe will be connected with any suitable source of supply for the ready and convenient renewal of the water within the lens.

The described construction affords a practical means for carrying my invention into effect, and I would state in conclusion that I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departure from the spirit of the invention.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:

1. A solar heating apparatus, comprising a support adapted to be turned about a vertical axis, a frame pivotally mounted in said

support at points between the ends of the frame, to rock vertically, a lens and lens tube carried by said frame, a casing carried by the frame and having a light-ray opening in axial alinement with the lens tube, a heating vessel in said casing serving to receive light rays from the lens tube and the opening in the casing, and means for adjusting said pivotally mounted frame, said means comprising a bar connected by its ends with the mentioned frame at points forward and back of the center of movement of the frame, said bar being in the form of a sector from a point at the approximate center of the bar rearwardly, and there being a drop in the bar at the forward end of the sector, forming a shoulder, rollers on which the sectors rest, keepers guiding the sectors adjacent to the rollers, and means to hold the bars in adjusted position.

2. In a solar heater, the combination of a support adapted to be turned about a vertical axis, a frame pivoted between its ends in said support to rock vertically, a lens, lens tube and heater casing carried by said frame, bars depending from the frame at the sides thereof and secured at their ends to the frame at points in front of and in rear of the center of movement of the frame, rear portions of the said bars being in the form of sectors and there being bends in the bars at the forward terminals of the sectors, presenting stop shoulders, and rollers on which the sectors rest and against which the stop shoulders may contact.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARCOS DE LA GARZA.

Witnesses:

MIGUEL MAGDALENO,
NATERDOD RENSON.