

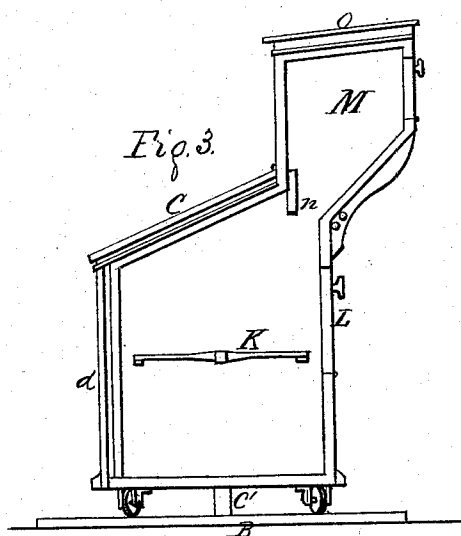
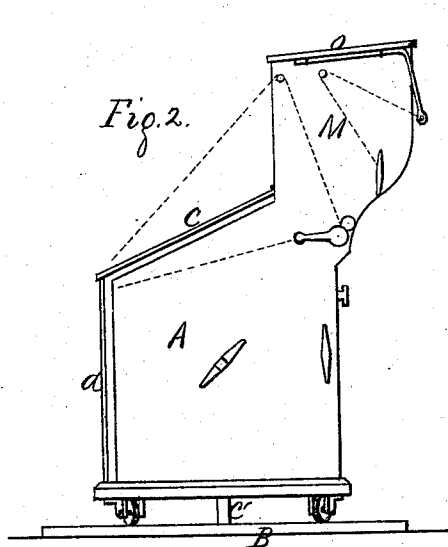
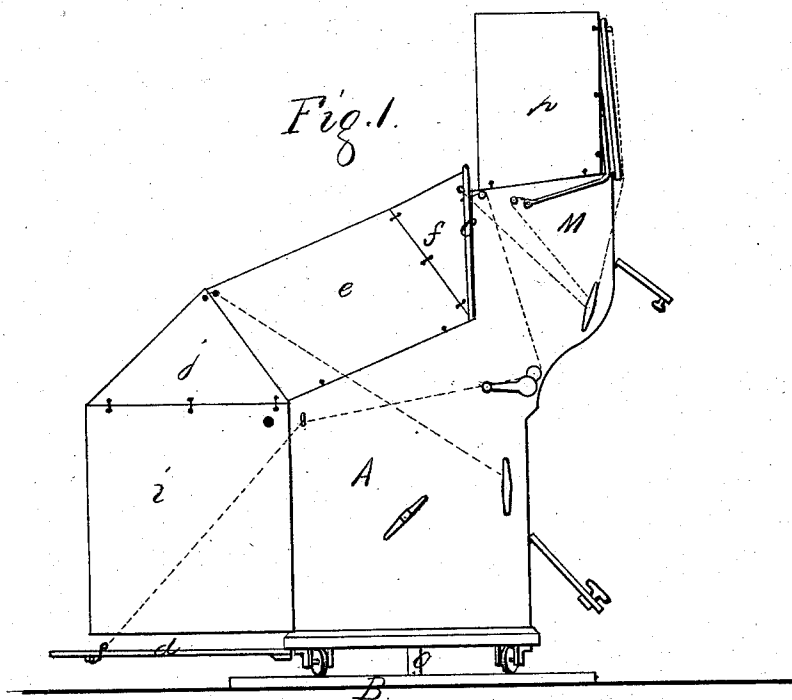
(Model.)

2 Sheets—Sheet 1.

E. F. ELY.
Drying Apparatus.

No. 229,109.

Patented June 22, 1880.



Witnesses
W. D. Clark
Will B. Schwartz.

Inventor
Edmund F. Ely
by Jas. L. Boone
his Attorney

(Model.)

2 Sheets—Sheet 2.

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Fig. 4. Patented June 22, 1880.

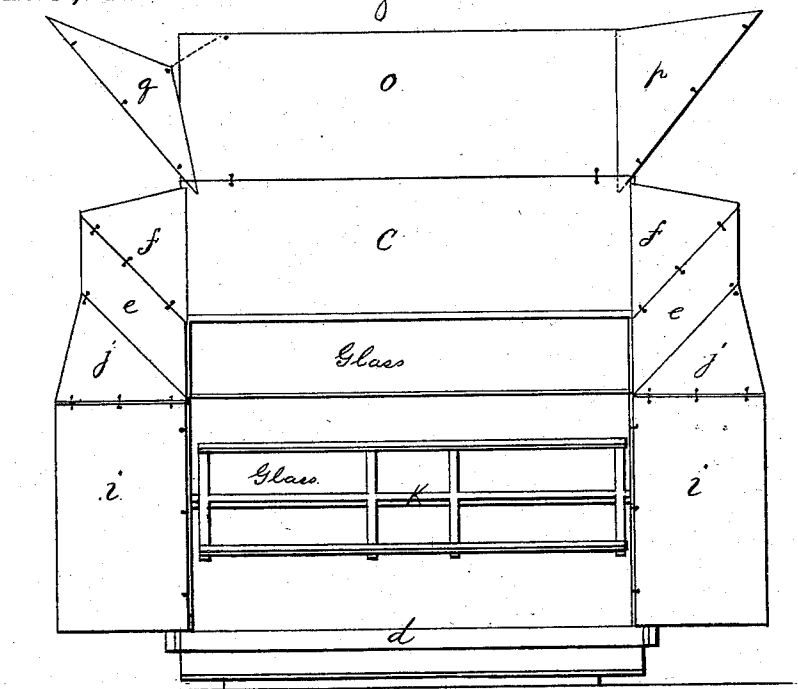
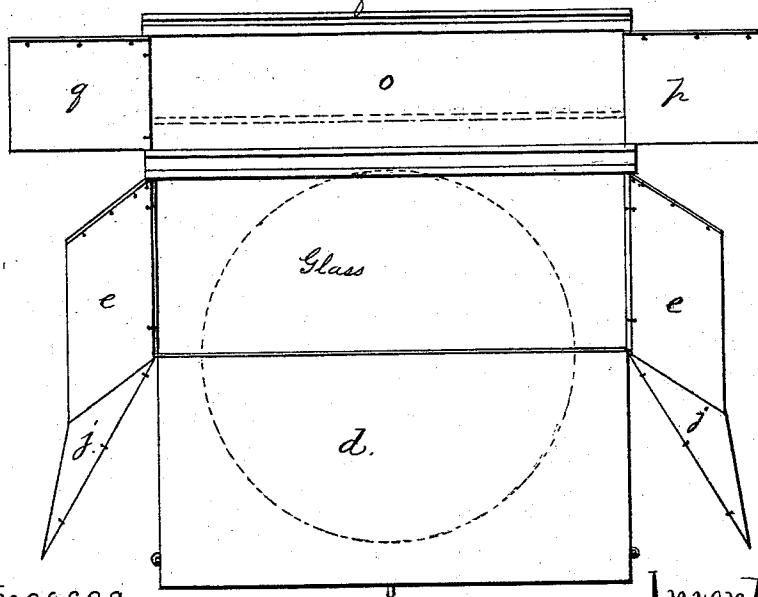


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDMUND F. ELY, OF SANTA ROSA, CALIFORNIA.

DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 229,109, dated June 22, 1880.

Application filed March 25, 1880. (Model.)

To all whom it may concern:

Be it known that I, EDMUND F. ELY, of Santa Rosa, county of Sonoma, in the State of California, have invented an Improved Apparatus for Drying Substances by the Heat of the Sun; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to certain drawings accompanying this specification and forming a part of the same.

My invention has reference to a novel apparatus for drying fruits, vegetables, and other alimentary substances by the heat of the sun; and it consists of a drying room or chamber the roof of which and one side are made of glass, in combination with a system of reflectors which are so arranged or disposed about it as to direct and concentrate the heat of the sun into the chamber upon the substance to be dried.

The apparatus is so arranged that the reflectors can be folded up and the whole closed into a compact box for storing or for transportation. It is mounted upon a spindle or turntable, so that it can be swiveled around to face the sun at all times, so as to secure the greatest possible benefit from the solar heat.

My invention also includes a system of drying-chambers, which are so arranged that the heat is utilized after it passes from the main chamber, and also an improved arrangement for sustaining and adjusting the trays upon which the substance to be dried is placed, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a side view of the drier with reflectors spread. Fig. 2 is a side view of the drier closed. Fig. 3 is an end sectional view of the drier closed. Fig. 4 is a front view with reflectors spread. Fig. 5 is a top view with reflectors spread.

A represents the drying room or chamber. This room or chamber has its bottom or floor, its ends, and its back constructed of wood, while its front and top are made of glass. The top can be horizontal or inclined. I prefer to make it inclined, as represented.

The structure I mount upon a base, B, upon a pivot, vertical spindle, or turn-table O', so that it can be swiveled or rotated upon its bearing, for the purpose hereinafter described.

At each end of the chamber, and also above and below its glass front, I mount a system of inclined reflectors, which are capable of adjustment, so that they can be set at the proper angle to concentrate the heat of the sun into the chamber. These reflectors can be variously arranged to accomplish the purpose sought; but I have devised the following arrangement and plan, which admit of their being folded upon the glass front and top to form a compact box when they are closed.

The upper reflector, *c*, is a wooden cover for the roof of the box or chamber, the under side of which is covered or coated with a reflecting substance or surface. It is hinged to the top of the box, so that when it is raised its under surface will be brought to the proper position to form the upper reflector.

The lower reflector, *d*, is also a wooden cover for the front of the box, and its inside is covered or coated with a reflecting substance or surface. This cover is hinged to the bottom of the front, so that when it is lowered its inner surface will form the lower reflector.

To each end of the top of the box I hinge a tin or other suitable plate or reflector, *e*, which can be turned back to the desired angle. A triangular plate or reflector, *f*, is hinged to the upper edge of the plate or reflector *e*, so that it will fill the space between the plate *e* and the end of the top reflector, *c*.

To each end of the front of the box I hinge a reflector-plate, *i*, which can swing outward to the desired angle, and a triangular reflector-plate, *j*, is hinged to its upper edge to fill the space between the upper edge of the reflector *i* and the front edge of reflector *e* when it is turned up. This forms a continuous flaring or angular reflector or system of reflectors, surrounding the glass top and front of the chamber, which will concentrate the heat of the sun into the chamber through the glass front and top.

These reflectors can be secured in place and adjusted by any convenient means; but I have represented, for the purpose of this application, an arrangement of cords which connect the detached edges of the reflectors and draw them to the proper angle and position. The opposite ends of these cords I attach to cleats on the ends of the chamber.

When the drier is in use the reflectors are secured in this flaring manner around the top and front; but when it is to be stored away or packed for transportation I fold the reflectors down, commencing with the end reflectors, *e*. I first loosen the cord or fastening that holds the triangular reflectors *f* in place. This allows the reflectors *f* to fold down upon the reflectors *e*. Next I loosen the cords that connect the reflectors *e* with the reflectors *j*, thus freeing the reflectors *e*, so that they will fold down upon the glass top, and also allowing the reflectors *f* to fold down upon the reflectors *i*. The cords which sustain the bottom or front reflector, *d*, being loosened, the reflectors *i* will then close up against the glass front. The top cover, *c*, and the lower cover, *d*, can then be folded down over the folded reflectors and secured in place, thus completely closing the box and protecting both the reflectors and glasses.

By this arrangement of reflectors I am able to concentrate the heat of the sun in the chamber so as to give a high degree of temperature, suitable for quickly drying fruits, vegetables, and other substances without danger of burning them.

The rack *K*, upon which the trays that contain the substance to be dried are placed, is mounted upon journals which bear in the end of the chamber, so that it can be turned or inclined to any desired angle in order to follow the sun's declension and allow the heat to act uniformly upon the fruit. The journals upon which this rack is mounted pass through the ends of the chambers, so that the rack can be adjusted from the outside.

The trays are placed upon the racks through a door, *L*, in the back of the chamber.

As many racks and doors can be used as desired.

To utilize the heat which escapes from the main chamber, above described, I construct one or more supplemental chambers, *M*, above it, and leave a narrow opening, *n*, leading through its top into the upper chamber, so that the heated air and moisture will rise into this upper chamber. This upper chamber I provide with a glass cover and surrounding reflectors *o p q*, in the same manner as the lower one, so that the capacity of the apparatus is increased and the escaping heat is utilized.

When in operation the machine should be shifted to the sun about every half-hour, in or-

der to keep the rays shining directly into the compartments.

This apparatus will produce sun-dried fruit in a very short space of time, and the fruit will be dried more uniformly and better than that dried by artificial heat.

Many kinds of fruits will not stand artificial heat. This is the case with grapes in converting them into raisins. My machine is intended more particularly to accelerate the sun-drying process, and it is therefore more especially adapted for making raisins. At the same time it gives the most satisfactory results with all kinds of substances which require to be dried.

This machine can be cheaply constructed, and can be run with very little trouble and expense. It is therefore especially adapted for a home or farm machine, with which every farmer can dry his own produce.

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

1. A swiveling or rotating drying-chamber, *A*, provided with a glass roof and front, in combination with a reflector or system of reflectors arranged around it, substantially as described, to concentrate the heat of the sun into the chamber and upon the substance being dried, substantially as and for the purpose above described.

2. The chamber *A*, with its glass front and top, in combination with the hinged top reflectors, *e f*, arranged to fold down upon the glass top, the hinged front reflectors, *i j*, arranged to fold against the glass front, the top wooden cover, *c*, with its reflecting under surface, and the front wooden cover, *d*, with its reflecting upper surface, the whole combined and arranged to operate substantially as and for the purpose herein described.

3. The combination of a supplemental drying-chamber, *M*, provided with surrounding reflectors *o p q*, with a main drying-chamber, *A*, the two being connected by a slot or opening, *n*, in the roof of the lower chamber, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

EDMUND F. ELY. [L. S.]

Witnesses:

PARK. A. BUELL,
GEO. L. ELY.