

# Oregon Agricultural College Extension Service

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**Division of Horticulture**

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## **A MODERATE-SIZED EVAPORATOR FOR FRUITS AND VEGETABLES**



Fig. 1. Evaporator in operation.

## A MODERATE-SIZED EVAPORATOR FOR FRUITS AND VEGETABLES

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Very many inquiries have been received from all parts of the state asking for directions for building an evaporator which would have the capacity to handle larger quantities of products than is possible on the small outfits as described in *The Preservation of Fruits and Vegetables*\* for use on the kitchen ranges, and yet not so large as to be of commercial size.

To satisfy the demand for a moderate-sized evaporator, one was designed at the College with a capacity, using prunes as a basis, of six

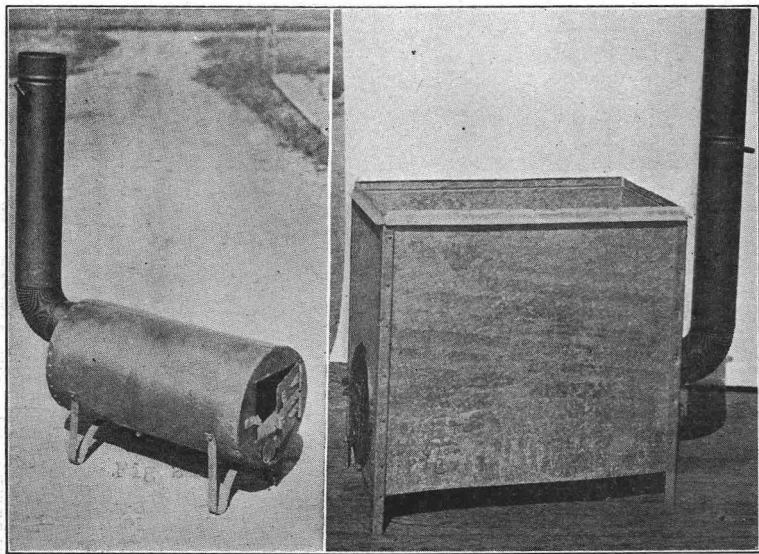


Fig. 2. Efficient, cheap, "Cannon" stove. Fig. 3. Fireproof case surrounding stove.

bushels at a filling. This evaporator was given a thorough testing before being sent out for demonstration purposes. While no claim is made that this type is either ideal or the best, demonstrations have shown that it is capable of doing good work and is not difficult or complicated to operate. It is easily built, moreover, and is not too expensive.

The pictures and drawings which appear in this circular, together with a brief description, will bring out the more important details in the construction and operation of the evaporator. For convenience in

\* Extension Bulletin 187, *Preservation of Fruits and Vegetables*, by C. I. Lewis and A. F. Barss. Second edition of 5,000 copies ready July 10, 1917.

shipping, the one here shown is made so as to be easily taken apart. This would not be necessary where the evaporator was to remain in one place.

**Stove.** The heat is developed in a small "cannon" stove (24"x12") made by a local tinsmith of No. 20-gauge black iron, riveted, and standing 4 inches from the ground. (Fig. 2.) This stove, which can easily be made for \$4.50, works as well as a more expensive one. There is a collar at the flue end to which standard 5-inch pipe is attached. A damper in the pipe and a draft slide in the main door of the stove regulate the fire. By having a 1- to 2-inch layer of ashes in the bottom, there is little danger of burning out the stove.

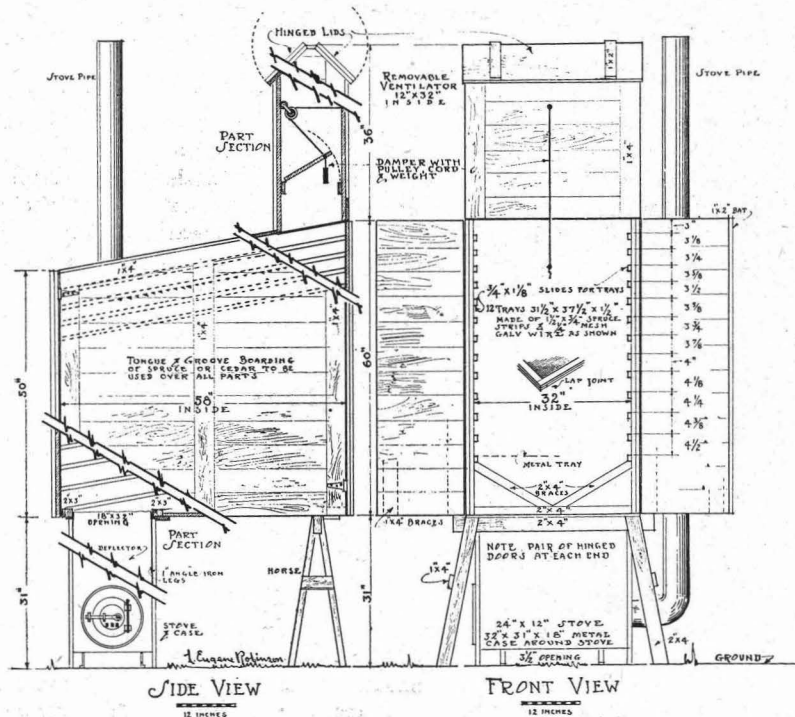


Fig. 4. Detail of moderate-sized evaporator.

**Stove Case.** The part surrounding the stove was made of galvanized iron so as to be fireproof and rust proof. A sheet thirty inches wide was used, and this was given a double angle at the top to make a flange on which to rest the cabinet. The case itself may be supported by being riveted to legs of angle iron, or, as in this instance, of heavy galvanized sheeting bent to form the angles. Using the sheet metal not only is cheaper but also the holes for the rivets can then be made with a hand punch and so save machine drilling which would be necessary with the angle iron. The openings on all four sides at the bottom allow free intake of air close to the stove. A deflector of sheet metal suspended just above

the stove, protects the lower trays from scorching by direct radiation from the stove, but does not interfere with the upward flow of air. (Fig. 3.)

**Cabinet.** The cabinet which is to hold the fruit is of such a size that standard trays ( $31\frac{1}{2}" \times 37\frac{1}{2}"$ ) as used in most tunnel evaporators will fit. The trays when inserted are offset on the slides  $1\frac{1}{2}"$  each to get a better distribution of the heated air over all trays. For the same reason, also, the slides which support the trays are spaced closer together toward the top, and are all given an upward inclination from the front of 2 inches to the foot. (See Fig. 4.)

**Ventilator.** The ventilator 1' wide by 3' high has wings at the top so that when a strong wind coming from one direction tends to choke down the draft that side can be closed and the other opened.

**Trays.** Trays made of double spruce frames with galvanized tray cloth between, are much more satisfactory than trays made entirely of wood, although the latter can be used and are less expensive.

**Regulating Devices.** A hinged wooden damper inside the ventilator, a metal sliding tray on the bottom slide in the cabinet, and movable boards at the base of the stove case, enable the operator to vary the amount of heated air passing through the evaporator in a given time. By arranging these properly and by regulating the fire, the desired temperature and flow of air can be obtained.

#### Bill of Materials:

150 board feet T. & Gr. boarding	4 joints 5" stove pipe
3 $2" \times 4"$ 12 feet long	1 5" damper
12 $1" \times 4"$ 10 feet long.	1 5" elbow
13 $\frac{3}{4}" \times 1\frac{1}{8}"$ 10 feet long	32" $\times 31" \times 18"$ metal case
24 $1\frac{1}{2}" \times \frac{3}{4}"$ 12 feet long	4 31" long metal supports
7 pairs of 4" strap hinges	10" $\times 30"$ metal deflector
4 door bolts	31 $\frac{1}{2}" \times 20"$ metal tray
pulley, cord and weight	5 lbs. 6 penny nails
12 30" $\times 36"$ pieces of $\frac{1}{4}"$ galvanized tray cloth	2 lbs. 4 penny nails
24" $\times 12"$ stove	

**Operation of Evaporator.** Specific directions for evaporation of fruits and vegetables will be found in Extension Bulletin 187. In using this evaporator the same recommendations will hold as with any other, and these, if followed carefully, should result in an excellent product. Better work will be done where the evaporator is protected from strong winds.

**Building an Evaporator.** The evaporator just described does good work and is very satisfactory. It will in many cases be found more expedient, however, to use this merely as a type. By following, in general, the ideas here worked out it will frequently be possible and advantageous to construct a small evaporator out of material already at hand or readily available such as used bricks, stones, old packing cases, odd lumber, etc., or to remodel some unused building such as the smoke house, the heat being furnished by the idle heater or laundry stove. With a little ingenuity it ought not to be difficult for almost anyone who cares to undertake it, to build for himself at home an efficient evaporator.