PORTABLE ELECTRIC CONVEYOR REMOVES EMPTY CONES FROM KILN

KARL B. LANQUIST, *Nurseryman,*
Mt. Shasta Nursery,
Forest Service, USDA

This motor-driven portable conveyor does a fast job of removing dried empty cones from the portable automatic cone kiln which has been in use at the Mt. Shasta Nursery for the past ten years [1].

The conveyor, designed and built by James E. Higgens, a maintenance worker at the nursery, has been in use for the past two years there. It has proven practical and efficient, and has saved between $500 and $800 a season in labor costs, depending on the volume of the cone crop processed. Formerly the empty cones from which the seeds had been removed were raked out of the bottom of the kiln by hand and loaded into a cart, a cumbersome and time-consuming chore. The new conveyor handles with ease all the cones processed in the four portable kilns at the nursery.

The conveyor (figs. 1 and 2) consists of a

1 See "Portable Automatic Cone Kiln" by Karl B. Lanquist in Tree Planters' Notes, No. 35, April 1959, p. 10.

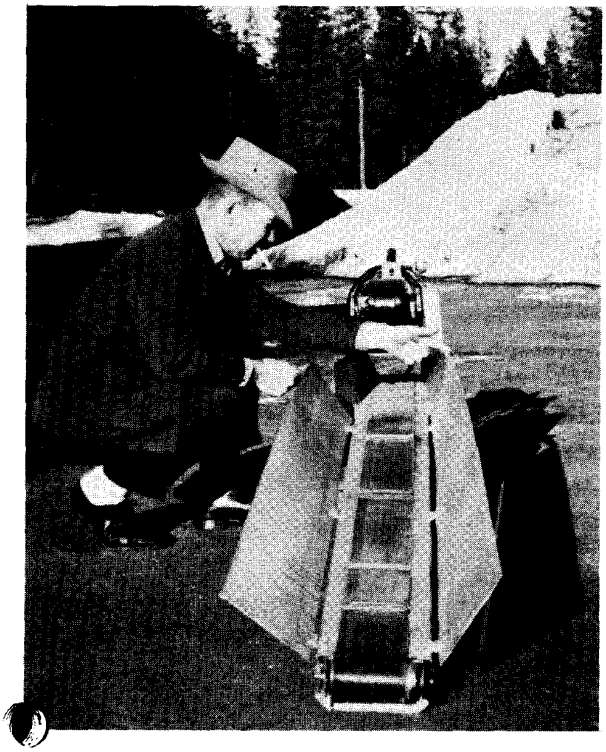

Figure 1.—Motor-driven conveyor (front end) with wings held up as they are when in use inside the portable automatic cone kiln.

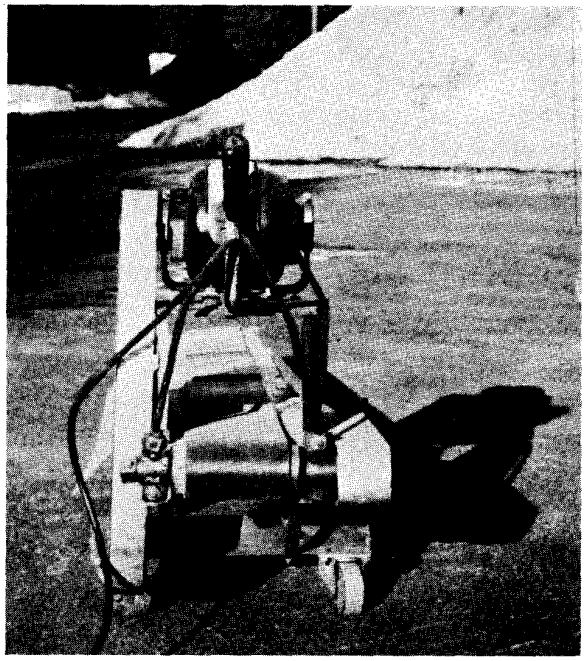

Figure 2.—Unloading end of conveyor, showing motor mounted above. Handle with rubber hand grip is visible at top center. *(Metal safety cover for pulleys and belt is in place at left.)* This end is mounted on metal casters for easy maneuverability.

continuous belt 5 inches wide and 17 feet, 4 inches long, pulled by a 1/4-h.p. motor with a 2inch pulley (fig. 3), and mounted on a light aluminum and tin frame. The rollers at each end are 2-inch steel pipe with 5/8-inch shaft welded in center. Two wings of tin are hinged to the frame, one to each side, and a length of tin covers the top of the frame for the belt to ride on.

To operate, the conveyor is placed into the bottom V trough of the kiln and the wings are folded out until they rest on the sides of the kiln. The conveyor is guided by means of a handle with a rubber grip at the end where the motor and pulleys are mounted; this end is mounted on metal casters for ease of maneuvering, and remains outside the kiln when in use.

(The kiln is a square box with double sheet metal walls, mounted so that the angle between two of the walls points downward to form a trough parallel to and close to the floor. A metal tray placed in the trough to catch the seeds from the tumbler mounted above it, which contains the cones. A time clock on a motor starts the tumbler

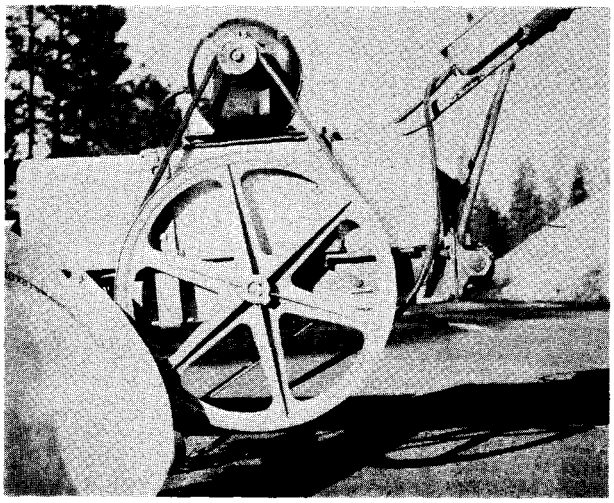

Figure 3.—Left side of unloading end of conveyor, with pulley and belt cover off. Two-inch pulley on motor turns 14-inch pulley which has a 2-inch pulley on the same shaft on opposite side. This reduces motor's high speed to the right speed to run the conveyor belt, via a V-belt to another 2-inch pulley on the end roller at right.

rotating once an hour for the desired period. Infrared lamps provide the heat, controlled by a thermostat at a steady 120 degrees F. Moisture from the drying cones condenses on the outer metal wall and drains out the bottom.)

With the conveyor resting in the trough of the kiln, wings open, the conveyor belt switch is turned on. The sliding door to the tumbler above is opened and the tumbler motor is turned on, turning the tumbler and dumping the dried and empty cones gradually onto the conveyor which carries

them out of the kiln into a cart or into another conveyor to be disposed of.

When the cones are all removed from the kiln, the conveyor is turned off, wings are folded back to the original position over the belt, the conveyor is removed, and the process is repeated in the other kilns.

The conveyor is easy and inexpensive to make from readily available materials. The accompanying photos show how it looks. Working drawings are available.