

# AN ADJUSTABLE WATER DISPENSER FOR CONDITIONING TOBACCO IN EXPERIMENTAL CHAMBERS<sup>1</sup>

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An adjustable water dispenser for conditioning tobacco in experimental chambers is described and illustrated. The dispenser is semiautomatic and delivers pre-set volumes at 250 cc/sec under 206 kPa pressure. Its use resulted in a 75% saving in labor over previous hand methods.

## INTRODUCTION

Experimental plots of tobacco are preferably cured in small chambers. Variation in environmental conditions and in maturity, leaf type, variety and other characteristics of leaves can, therefore, be minimized, preventing extremes of green fixation, browning and other curing aberrations associated with commercial-size kilns. Experimental plots on the Delhi Research Station are cured in 150 small chambers, each 1.37 X 1.37 m and 2.44 m high. The curing area is 2.13 m high and is separated by a false floor from electrical immersion heaters in water troughs on the chamber floor that provide humidification to condition the tobacco. The use of small chambers can be warranted only on the basis of the cured leaf quality needed for research. Labor requirements for loading, unloading, curing and conditioning are greatly in excess of conventional kilns. The current method for conditioning dry, cured tobacco in the chambers is particularly laborious as it involves the hand-filling of three water troughs in each chamber, using water from a portable tank and calibrated containers. This technique of humidification must be used as moisture is added in relation to the original moisture content of the tobacco in preselected amounts during the 5 - 8 days needed to complete the curing cycle. A continuous water flow to the troughs does not provide sufficiently accurate control (e.g. float valves in the troughs).

A semiautomatic water dispenser was designed and is described, which minimizes labor requirements for humidification, is of low cost and ensures accurate delivery of known volumes of water.

## THE EQUIPMENT

The dispenser (Fig. 1) consists of a trolley (A) carrying a 23-cm inside diameter plastic cylinder (B) which has an adjustable end wall (C) and a free floating piston (D). A four-way water valve (E) (Model 8041-1/2W,

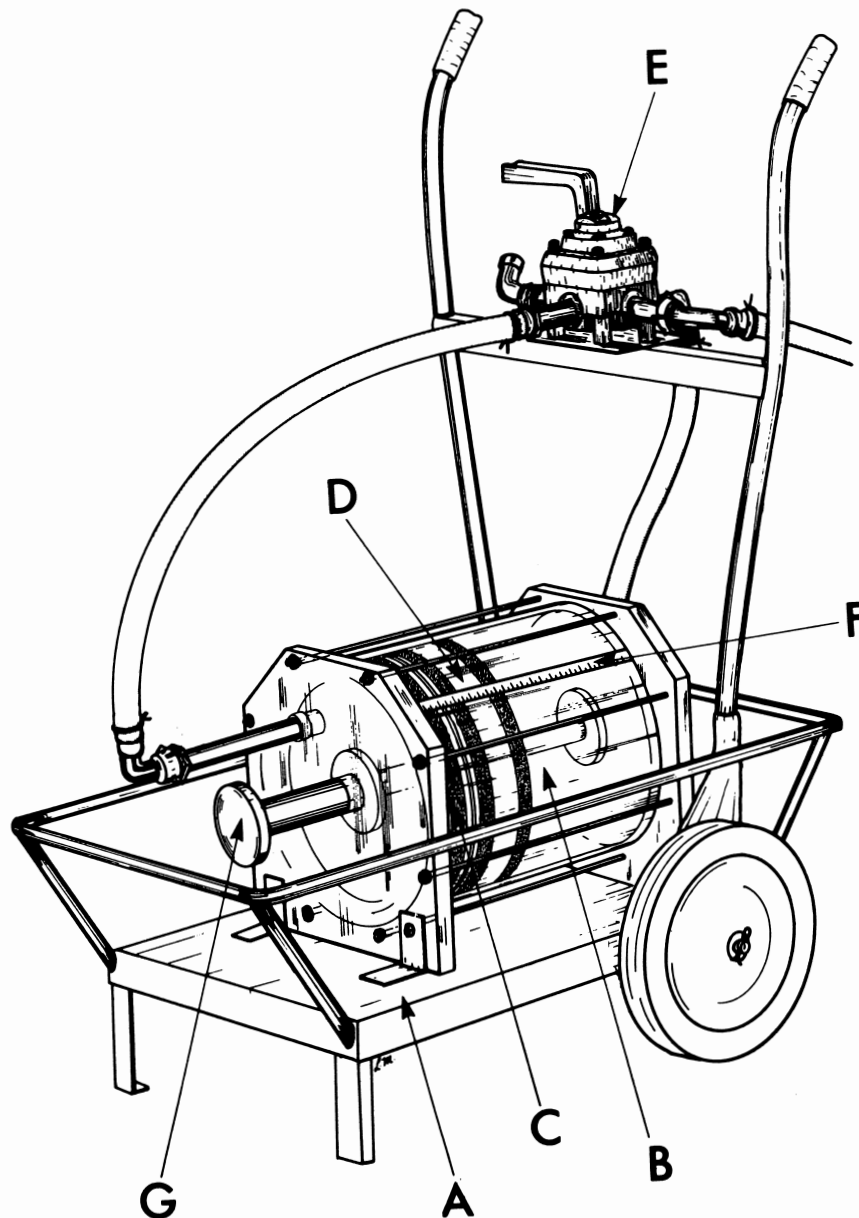


Figure 1. The semiautomatic water dispenser. A. trolley; B. cylinder-clear acrylic plastic; C. adjustable end wall inside cylinder; D. free-floating piston with flexible seals (No. 10,000 Chesterton Super Monoseal, Everett, Mass. 02149) to operate with the piston moving in either direction; E. four-way, hand-operated valve connected to water supply; F. centimeter scale to set length of cylinder by moving end (C); G. cylinder end wall adjustment screw.

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