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The Nebraska Egg Cooler

Irven L. Williams and F. E. Mussehl

WHEN Mrs. John Doe goes to the local community food store, her trip is of interest to Nebraska egg producers. They want her to buy eggs liberally. Her choice of food items is determined by relative prices and quality of different foodstuffs. Although Mrs. Doe is a very busy person, and does not have time to learn all the details of selecting eggs on a quality basis, she knows that the label, "U. S. Grade A," does assure quality, and she accepts with complete confidence eggs marked with such a designation.

How then can Mrs. Doe and a hundred million other urban consumers be provided with eggs of U. S. Grade A quality?

Every producer knows that heat is harmful to the quality of eggs, and that the first step in holding fine egg quality is prompt removal of the animal heat. The Nebraska egg cooler has been developed for

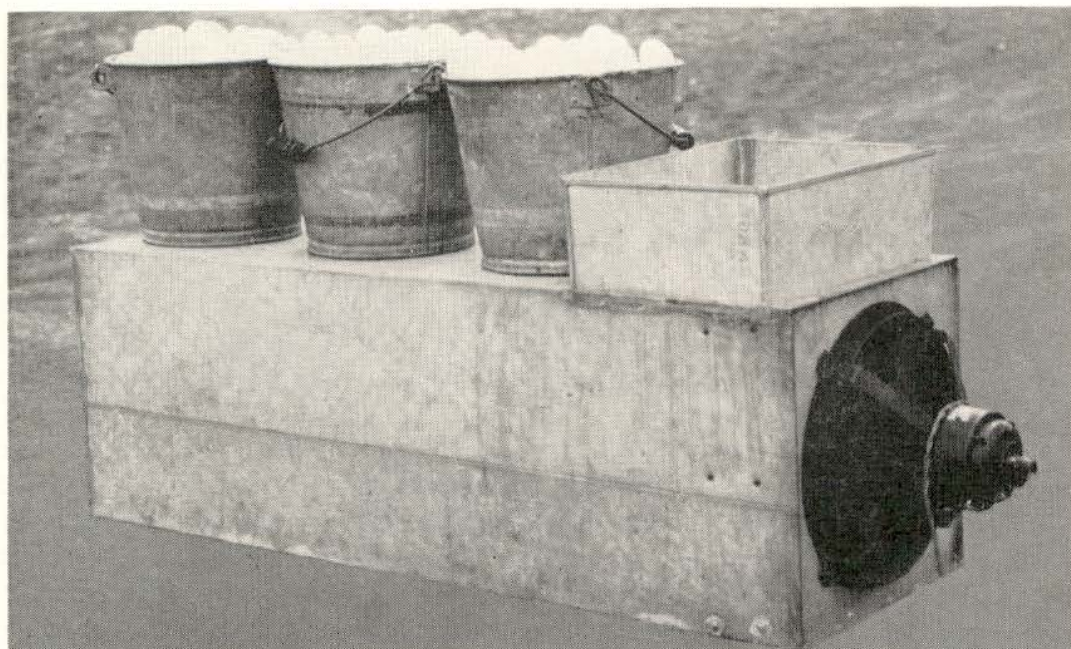
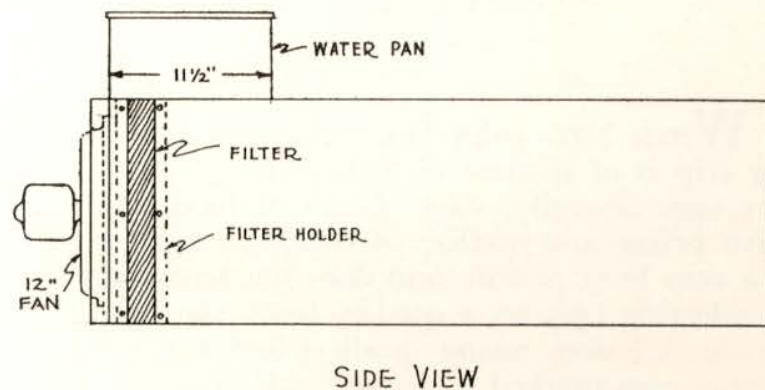
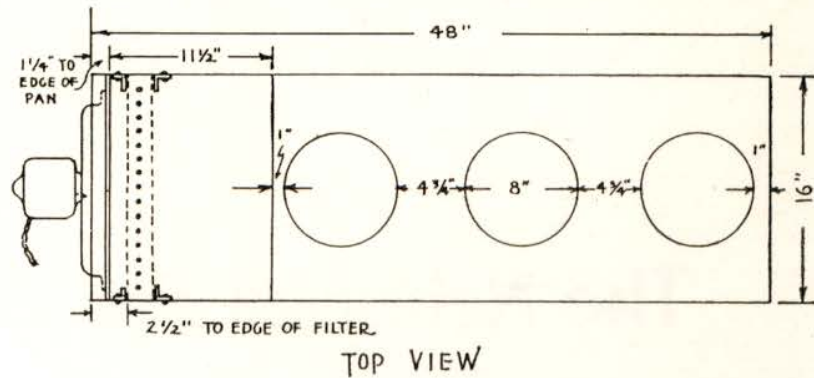


Figure I. Cooler ready for operation.

Working Drawings for the Neb



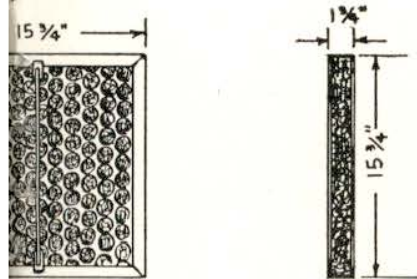
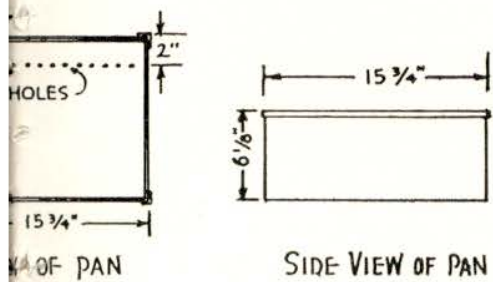
this purpose. Construction costs are moderate, and repeated observations demonstrate the effectiveness of the principle. Its basic factor is the temperature-reducing effect of cool, humid air passing over the eggs, as soon as possible after they are gathered.

Figure I shows the cooler ready for operation with about 15 dozen eggs in each of three pails. These pails are used for gathering eggs, saving the extra labor that would be required to transfer the eggs to the precooling container.

Figure II shows pail with hardware wire cloth welded over the bottom, so that air may pass through when the pails with eggs in them are placed on the cooler. One-fourth inch mesh wire is satisfactory for this purpose.

Figure III shows some details of the fiber-glass filter which is kept moist from a water supply in the metal pan placed just above it. The pan holds about three gallons of water, and is perforated with holes $1/32$ inch in diameter just above the fiber-glass filter. The filter can be easily removed so that it may be cleaned in an acceptable manner or sterilized by baking to destroy any undesirable micro-organisms which might become established. Being an all-mineral material, the

Egg Cooler



FILTER

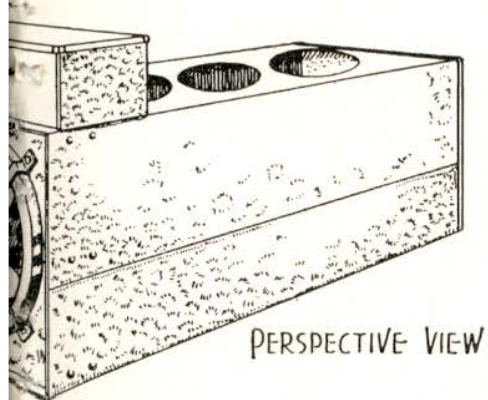


Figure II. Pail which permits circulation of air.

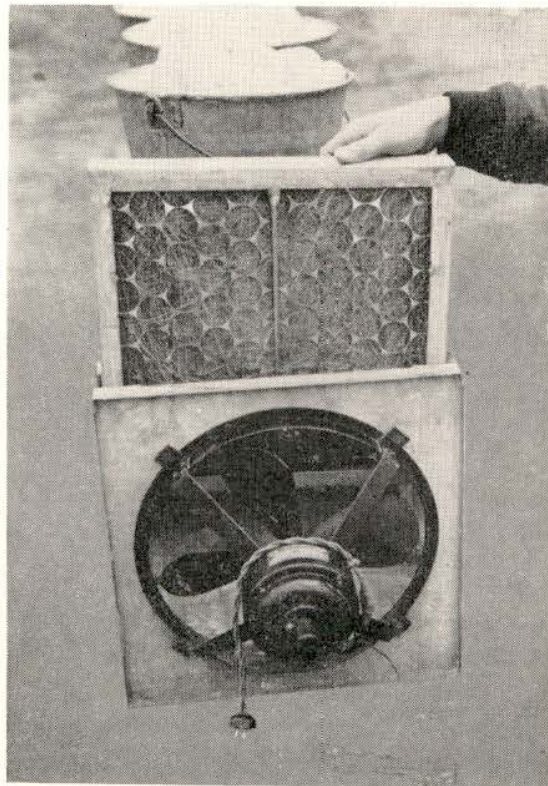


Figure III. Fiber-glass filter which cools the air.

fiber glass is superior from this standpoint to excelsior, burlap or other materials which might be used for an evaporation surface.

A 12-inch fan forces the air through the wet fiber glass at the rate of 3.5 feet per second. It has been observed that the temperature of the water used has the more important effect on the rate of heat removal from the eggs. However, the evaporation of water in the fiber-glass filter produces a slight effect also on the temperature of the air in the room in which the cooler is operated, which may result in further cooling the eggs. Ordinarily, well water at a temperature of 55° to 60° F. will very effectively cool the air for the purpose.

Figure IV shows the rate at which the heat was removed from eggs which started with an internal temperature of 94° F. Temperatures were measured with a thermo-couple in the center of an egg located in the center of a pail of warm eggs. The room temperature, at the time these observations were made, was 78° F. and the water temperature was 73° F. Temperature of the eggs was brought below the room temperature in about 60 minutes after the pails were placed on the cooler.

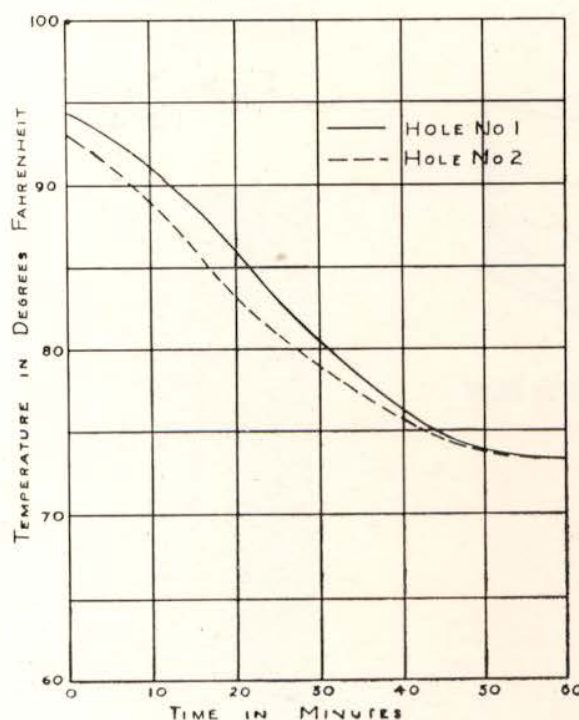


Figure IV. A graphic picture of how heat was removed from eggs.