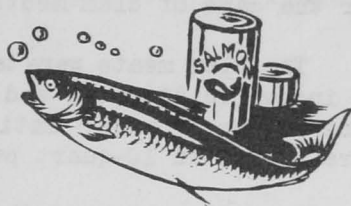


CONVERSION OF SALMON CANNERY TO CLAM PACKING

By L. G. McKee*

In the winter of 1945-46, the operators of a salmon cannery decided to process butter clams during the off season when salmon was not available. Since salmon canning is quite a different process from clam canning, a conversion problem existed. The problem was further complicated by the fact that the clam pack would not be large, so the conversion would need to be accomplished without undue expense. The following alterations were made:



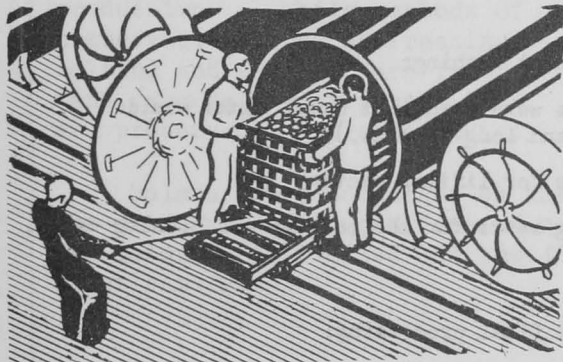
A short line of salmon cannery retort track was laid from the retort car pit through a door to the outside of the cannery dock, where the clams were delivered in 80-pound lug boxes and dumped on the floor of the dock for washing.

A line of retort track was taken up from a place where it was not in use and laid from the retort car pit to the salmon hand-packing table and parallel therewith.

The clams that were dumped on the dock were washed thoroughly with a high pressure hose. Numerous holes were bored in the dock floor to allow the dirty water and sand to drain away. A rotating gravel screen washer would have been more efficient, but it was not obtainable, and there was not sufficient time to build one.

The washed clams were shoveled on salmon cannery coolers, or trays, resting on a standard retort car. Between the car and the first cooler, or tray, was placed a metal pan, 40" x 40" x 8", to catch the clam nectar from the steamed clams. Each cooler was fitted with a square of one-half inch mesh hardware cloth, covering the entire bottom of the cooler and extending up on the sides to prevent the loss of clams between the slats of the cooler.

The cars, loaded with several trays of washed clams, were run into the salmon retort and steamed for approximately 15 minutes at 220° F. They were then run from the retort to the packing table, where the trays of steamed clams were lifted off and placed side by side on the packing table. The openers worked directly from the trays and dropped the meats into 10-quart pails. The size of the pails was unimportant, but this particular size was more readily obtainable. Larger containers would tend to crush the clams on the bottom of the pail, and smaller containers would entail more labor in removing them from the openers more often. Shells were passed through waste chutes at the side of each opener to shell heaps



beneath the floor. There was not a sufficient volume of waste shells to warrant their transportation to a shell-grinding plant.

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When the retort cars were emptied of clam trays, these cars, with the nectar trays still in place, were run along the track to a settling tank embedded in the cannery floor. This tank extended about 10 inches above the floor and it was only necessary to tip the nectar tray to the edge of the tank to let the nectar drain off into the settling tank. Here, the nectar was allowed to remain until the sand had settled to the bottom. The nectar was then pumped off through a surface suction to the nectar processing tanks, where the juice was diluted with water, salted, and boiled. The nectar thus collected was held in reserve until needed for the cans of clam meats.

The clam meats were taken from the openers directly to a rotating screen washer 20 inches in diameter and 72 inches long, in which they were tumbled in a pressure stream of water until thoroughly cleaned of grit. Meats from the washer were stored in 10-quart pails until needed by the packers.

Meats were taken to the regular salmon patching table located between the salmon filler and the clincher. Extensions 12" x 24" were added to each side of the patching table so the girls packing the clam meats into the cans could stand sideways to the table. The packers filled the meats into the cans using the same balances employed for salmon packing. The cans were then placed on the conveyor to the clincher and the nectar added from an overhead gravity tank as the cans entered the clincher. Nectar was pumped from the processing tanks to the gravity tank as needed by a small electric sump pump. Cans used were the regular salmon size cans 301 by 411, but C-enamel type. Thus, no adjustment had to be made on can runs or machinery.

The salmon canning high speed seamer was reduced in speed to about 60 to 70 cans per minute to avoid spilling the nectar from the cans as they entered the clincher and seamer. The seamer was of the vacuum type, which removed air from the cans during the sealing process. Therefore, it was not necessary to add boiling hot nectar to the cans to obtain a vacuum. Also, the mechanical vacuum was used in order that the regular safety controls on the seamer, actuated by vacuum, would still be operative.

Processing was done in the regular salmon retort using a process period of 90 minutes at 240° F.

With the above arrangement, the only new equipment added was:

Nectar trays, 40" x 40" x 8" high;

Rotating screen washer, 20" x 72", for meat washing;

Tanks for holding nectar (Salmon tierces were used, but metal tanks would have been better for ease of cleaning and long service.);

Two $\frac{1}{4}$ HP electric centrifugal sump pumps for lifting nectar;

Ten-quart pails for handling and storing meats for the packing and opening table.

The regular salmon equipment used was:

Salmon retorts for pre-cooking clams and final processing;

Retort trays or coolers, and retort cars;

Retort car track taken up from floor where not needed and rearranged;

Salmon hand-packing table utilized for clam-opening table;

Salmon-patching table between clincher and salmon filler, used for a clam meat filling table;

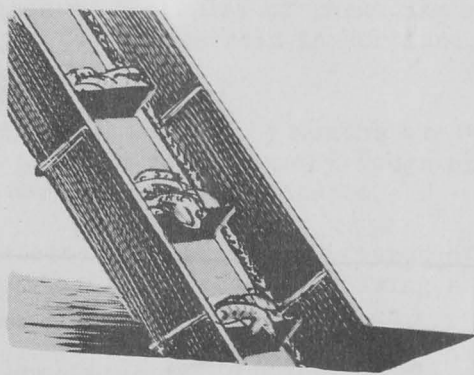
Cannery balances (used at salmon-patching table) employed for weighing clam meats into cans;

High speed salmon vacuum seamer used for clams by reducing speed to avoid spilling brine.

No salmon canning equipment was moved or displaced except for a few lengths of retort car track.



The salmon canning industry is located on the Great Circle of the North Pacific coastal area extending from the State of Oregon to northern Japan, although salmon are caught commercially in the United States as far south as Monterey Bay in California. The total annual world pack of canned salmon in this area averages about 10,000,000 cases of 48 one-pound cans. Alaska is the most important of the political divisions in this area, accounting for almost 90 percent of the United States pack of canned salmon and 60 percent of the world production. While methods of preservation such as freezing, salting and smoking are important, more salmon are canned than are preserved in all other ways.



Salmon are also caught on the Atlantic Coast of North America but are not canned in quantities of commercial importance as the supply of raw material is limited and the flesh usually has a very light color after canning.