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Different Methods in Preparation of Canner Food

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Commentary

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ABOUT THE STUDY

Food is processed and sealed in an airtight container as part of the food preservation technique known as canning (jars like Mason jars, and steel and tin cans). One to five years is the normal shelf life provided by canning, though it can be much longer in certain situations. A freeze-dried canned food, such canned dried lentils, could remain edible for up to 30 years. The National Food Processors Association analysed canned food samples recovered from the disaster of the steamship Bertrand, which drowned in the Missouri River in 1865. The 109-year-old meal was found to be still safe to consume even though its appearance, fragrance, and vitamin content had changed. This was because there was no sign of microbial development.

Methods in preparation of canned food

Glass jars were widely replaced in industrial canneries by cylindrical tin can or wrought-iron canisters (eventually abbreviated to "cans") as a result of Peter Durand's work because the original fragile and heavy glass containers caused transportation issues (1810).

Glass jars are far more brittle than cans, which are easier, quicker, and cheaper to produce. For some high-end items and home canning, glass jars continue to be popular. Soldiers had to cut the cans open with bayonets or smash them open with boulders before the invention of can openers thirty years later. The material most frequently used today is steel with a tin coating. When canning items like MREs and Capri Sun beverages, laminate vacuum pouches are also employed.

Microbial control of canned food: Several techniques are employed to stop the food from spoiling before and during containment. These include pasteurisation, boiling (and other applications of high temperature over time),

refrigeration, freezing, drying, vacuum treatment, antimicrobial agents that are natural to the recipe of the foods being preserved, a sufficient dose of ionising radiation, submersion in a strong saline solution, submersion in an acid, base, osmotically extreme (for example, very sugary) or other mimetic conditions.

No method, besides sterilisation, is 100 percent reliable as a preservative. For instance, only at temperatures higher than the boiling point of water can the spores of the bacteria *Clostridium botulinum*, which causes botulism, be destroyed.

Sealing: double seams: Modern double seams give the tin can an airtight seal; they were created in 1888 by Max Ams. This can's ability to be airtight is essential for keeping its contents sealed within and for preventing microorganisms from getting inside. Sanitary cans are another name for double seamed cans. This type of can was created around 1900 in Europe using the customary cylindrical body constructed of tin plate.

By forming two tight continuous folds between the cylindrical can body and the lids, a can that has been sealed in this way is immune to contamination. Due to advancements in manufacturing speed and the elimination of the requirement for solder, costs were decreased.

The can, lid, and final double seam are shaped by rollers during double seaming. A sheet of coated tin plate is the first step in manufacturing a sanitary container and lid that is appropriate for double seaming. Rectangles are cut, twisted around a die, and then welded together to form the can's body, which has a side seam.

The cylinder's ends are then flared out with rollers to form a quarter-circle flange around the circumference. As any misalignment may result in inconsistent flange form and jeopardise its integrity, precision is necessary to ensure that the welded sides are completely aligned.

The sheet is then cut with a die cutter into a circular. A downward countersink is made in the circle using a stamping press to ensure that it fits tightly inside the can body. The end effect resembles an upside-down, extremely flat top hat. The finishing curl is then produced by rolling the outside edge downward and roughly 140 degrees.

As a result, a steel disc with a curled edge and a steel tube with a flanged edge are produced. The curl is filled with a rubber substance.

Seaming: The base plate and chuck, respectively, hold the body and end in place as they are brought together in a seamer. During the seaming process, the base plate gives the can body a secure foundation, and the chuck fits securely into the end (lid). As a result, the end's countersink lies just below the flange at the top of the can body. The terminal curl extends just a little past the flange.

First operation: The seaming head forces a first operation roller on the end curl after the seam is brought together in the seamer. The flange is curled in toward the body and under the flange when the end curl is pressed up against it. The end and body are now loosely linked together after the flange is likewise bent downward. After that, the first operation roller is drawn back.

Second operation: The second operation roller is then brought into contact with the partially produced seam by the seaming head. All sanitary cans must have a filling medium inside the seam in order to maintain a hermetic barrier between the metal-to-metal contacts.