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CHAPTER 53

LOCKER AND FREEZER PROVISIONING PLANTS

Plant Classifications, General Design Requirements, Capacity Requirements, Building Construction, Lockers, Processing Equipment, Condensing Units, Cooling Units, Temperature Control, Calculations and Examples

In a frozen food locker plant, foods are frozen and held in storage at a low temperature for a community group of patrons (families and others). The principal components of a typical plant are:

1. A chilling room where freshly killed meat is chilled, and other food products are held under refrigeration prior to processing and preparation for freezing.
2. An aging room where certain meats such as beef and mutton are allowed to hang in carcass form for usually 7 to 15 days in a refrigerated room.
3. A processing room where meats are cut to order, fowl is cleaned and dressed, and all types of meats, fruits and vegetables are prepared, packaged and identified prior to freezing.
4. A curing and smoking room.
5. A freezing cabinet or room in which all foods are completely frozen prior to storage in the patron's individual locker.
6. A locker room containing from a few to several hundred lockers for rental to individuals for long-time food storage. This room is held at a constant and uniform low temperature.

Many frozen food locker plant operators have found that the tremendous increase in the use of individually owned home freezers has made it necessary to provide additional facilities for chilling, aging, curing, processing, and freezing of meats and other foods which are immediately taken home by the patron for storage in the home freezer. Many have also found it necessary and profitable to increase existing facilities in order to supply commercially frozen foods to their patrons. In many areas this trend has been so substantial that the operator has changed the name of his locker plant to include the term *Frozen Food Center*.

This industry originally was made up entirely of *Frozen Food Locker Plants*, the vast majority of which are located in rural and small town areas. These plants provide custom meat processing and freezer storage services for farmers enabling them to preserve their home raised produce for later consumption.

With the home freezer has come a demand among city dwellers for frozen food services. To fill this need many new business establishments are springing up in urban areas. These firms specialize in selling meat and frozen foods in quantity at lower than retail prices, delivering them to the homes and financing these large purchases for the consumer over a considerable period of time. This method of food selling, frequently referred to as the *food plan* is conducted by business establishments that are known as *Freezer Provisioners*. Thus we see that *The Locker and Freezer Provisioning Industry* is serving two primary markets—the locker plant serving the rural area and the freezer provisioner supplying the city market.

Latest statistics indicate there are about 9900 locker and freezer provisioning firms in the United States primarily engaged in supplying home freezers. This does not include thousands of retail grocery stores and local slaughter houses who supplement their primary activities with freezer provisioning. Accurate data are not available on these supplementary sources. The number of locker plants has decreased in recent years. New construction has been at a minimum due to the capital outlay required for low temperature storage space. Small inefficient plants have quit business, while others have converted to freezer provisioning. Freezer provisioners have increased in numbers. The investment in inventory and delivery equipment is probably higher in all categories of firms. It is estimated that one out of every seven families in the United States is now served by this industry.

The total zero storage space in locker plants and home freezers under the control of the consumers is now estimated at over 200 million cubic feet, capable of holding about 6½ million pounds of food. In each year about one million home freezers are added. Direct consumer control over such a large zero storage volume has changed food buying habits of many housewives. More are purchasing meat and frozen foods in wholesale quantities for convenience, better living, and to have foods available out of season. Some are actually effecting savings by their purchases due to their ability to store for long periods of time.

Fig. 1 shows the steps through which various foods pass in a modern locker plant. Special attention should be given to the relative locations of the component parts of the plant so that the flow of food products may be accomplished with a minimum of handling time and expense.

Many factors influence the construction of a plant, and it is important that a thorough study be made before construction begins. Materials available, services to be rendered by the plant, size of the plant, type and location of building, affiliated business if any, and other factors in addition to the type of refrigeration to be used are reviewed in this chapter.

It is necessary to take into consideration state laws and local ordinances, some of which regulate chill room and storage temperatures, freezing conditions, temperature records, kind of refrigerant and other features. Facilities for health protection are also provided for in many state regulations, while local ordinances may govern the operation and location of slaughter houses, and the inspection and sale of meat.

In the commercial frozen food industry a number of different methods of freezing are used. Only a few are practical for

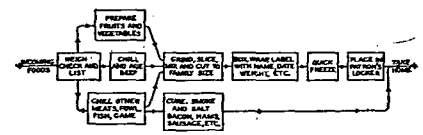


Fig. 1 .... Flow Diagram of a Frozen Food Locker Plant