process pattern

Breadmaking

[Informational Process Analysis]

The most widely used breadmaking process in the manufacture of commercial bread is the sponge and dough method.

The first step of this process involves setting a mixture of flour, yeast, and water, called the "sponge," into the dough troughs. Seven hundred pounds of flour, for example, may be conveyed mechanically from the flour storage bins to the mixer. A yeast suspension is added to the flour, together with enough water to make the total water content about 460 pounds. The ingredients are then combined into the spongy mixture and placed into a dough trough where fermentation is permitted to take place.

Fermentation is **the second step** in the sponge and dough method. The dough troughs are large, stainless steel oblong containers with rounded bottoms and are mounted on wheels, to facilitate their being rolled into the fermentation room. Here, where the temperature is held at 80 degrees F., the sponge ferments for about five hours. During this time, there is a chemical interaction of carbonates and acids, causing the sponge to rise.

At the completion of the fermentation period, the sponge is **ready for the next step** in the method, mixing the dough. The sponge is returned to the mixer together with three hundred pounds of flour, 240 pounds of water, nonfat milk solids, and sugar. These ingredients are mixed into a dough, a process which plays an important part in determining the lightness and porousness of the ultimate loaf of bread. The fourth step is the division of the dough pieces into loaf size. The dough is conveyed mechanically to the dividing machine, which cuts the dough into pieces. From the divider, the pieces are carried to an overhead machine called a *proofer*, where each piece of dough remains for fifteen minutes. Here the dough is softened in preparation for the molder, which first flattens the dough pieces and then curls the dough the length of the bread pan.

After the dough pieces have been panned, the pans are moved into a proof box under a constant temperature of 100 degrees F. The actual baking, of course, concludes the entire process. From the proof box, the pans go to the oven by means of traveling trays. The temperature of the oven is maintained at 450 degrees F. in order to cause the dough to rise. The speed of the trays is controlled so that the pans remain in the oven for exactly twenty-seven minutes.

As the bread emerges from the oven **after that time**, it is dumped from the pans onto belts which convey it to the cooler. After about an hour and a half in the cooler, the bread is carried once again, this time to the slicer, where it is mechanically sliced to uniform thickness.

Finally, the sliced loaf is wrapped by machine and made ready for early morning delivery to the retail stores.