



Fig. 5.

ice should not be put into the cream to raise or lower the temperature. Warm cream from the separator should not be added to cream already cooled. The cream should be stirred well each time a fresh lot is added, and occasionally until it is ready to churn. Fig. 5 shows a first class cream stirrer, with a saucer shaped tin disc perforated, and a wire handle about 24 inches long.

*Preparing the cream for churning.*—This means developing the proper acidity (sourness) and having the cream at the right temperature. No fresh cream should be added for at least 12 hours before churning. If the cream is sweet at this time, a small quantity (5 to 10 p.c.) of clean flavoured sour skim milk may be added with good results and the cream kept at churning temperature for 12 hours.

The appearance of the cream when ready to churn should be thick and glossy, and pour like thick syrup; it should smell and taste slightly sour.

The proper temperature of the cream for churning depends upon :

- (1) The richness of the cream,
- (2) The length of time the cows have been milking,
- (3) The breed of the cows, and
- (4) The feed of the cows.

It will therefore be seen how difficult it is to give any temperature as the best, for churning. The best temperature for churning can only be known by testing the per cent of fat in the cream. It is well, however, to know that the following conditions require low churning temperatures (54 to 62 degrees):

- (1) Very rich cream,
- (2) Cream from the milk of fresh cows,
- (3) Cream from the milk of cows receiving succulent feed, such as fresh pasture, clover, ensilage, and wheat bran.
- (4) Cream from the milk of Jersey or Guernsey cows can usually be churned at a lower temperature than that from other breeds.

Conditions that require high churning temperatures (64 to 75 degrees):

- (1) Very thin cream,
- (2) Cream from cows a long time in milk,
- (3) Cream from the milk of cows receiving dry feed, such as hay, straw, dry pasture, or cotton seed meal.

It cannot be definitely stated how high it may be necessary to raise the temperature of the cream to make butter under some of the above conditions, and the best rule that can be given is to raise the temperature high enough to bring the butter in about 30 minutes.

Too high a churning temperature is not desirable, it causes the butter to come in soft lumps instead of in flaky granular form, and causes a greasy texture in the butter and also results in the incorporation of too much buttermilk, which is likely to sour and spoil the flavor of the butter.

Too low a churning temperature is also undesirable, although it is better to have the temperature a little low rather than too high. Cream at too low a temperature is difficult to churn. When the butter does come, it will be in such a firm condition that it will not gather properly, and is apt to make a dry brittle butter that does not spread easily. It is nearly always necessary to have a higher churning temperature in the fall and winter than in spring and summer. Aim to have the cream at such a temperature that the churning will be completed in from 25 to 30 minutes.