

RECEIVING AND CLEANING

Receiving

- According to nature of food
- Use the refrigeration system
- Maintain the Temperature

cleaning

Type of contaminants

- Plants
- Animals
- Microbial
- Minerals
- Chemical

Methods of cleaning

There are two methods

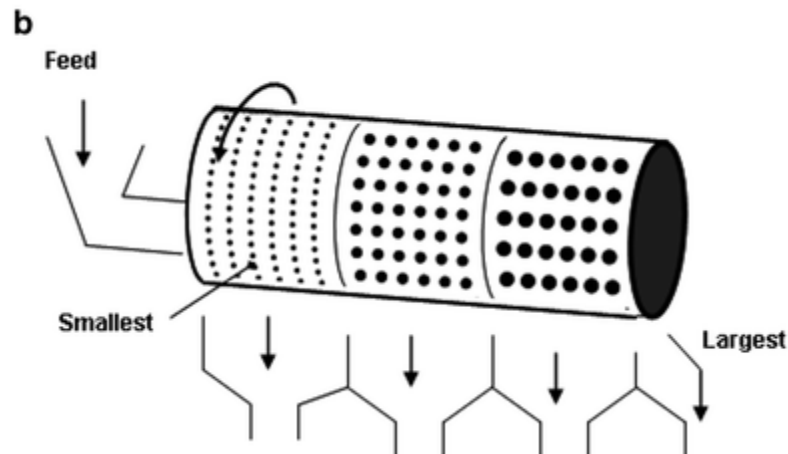
1. Dry methods
2. wet methods

Dry Methods

- Screening,
- aspiration,
- winnowing,
- abrasion and brushing,
- electrostatic cleaning,
- electronic metal detection

a) Screening

Screens are essentially size separators based on perforated drums, beds or wire mesh. Larger contaminants are removed from smaller food items: e.g. straw from cereal grains, or pods and twigs from peas.



b)Aspiration

- Aspiration exploits the differences in density of the food and the contaminants.
- It is widely used in the cleaning of cereals, but is also incorporated into equipment for cleaning peas and beans.
- The **principle** is to feed the raw material into a carefully controlled upward air stream. Denser material will fall, while lighter material will be blown away depending on the terminal velocity.

Aspirator

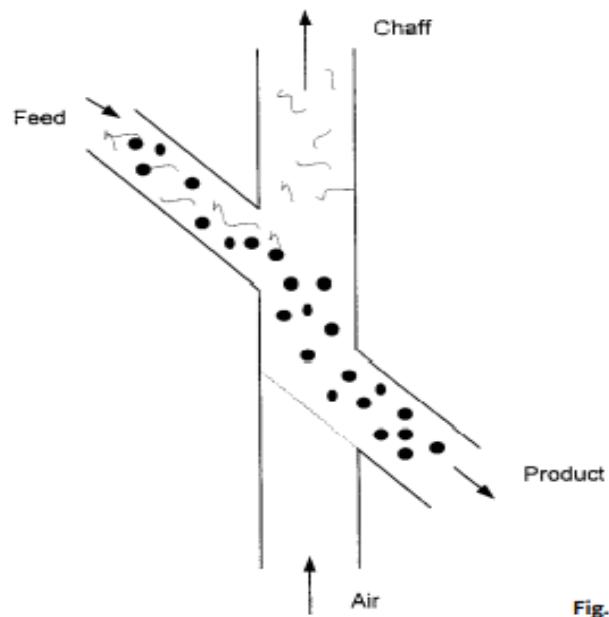


Fig. 1.3 Principle of aspiration cleaning.

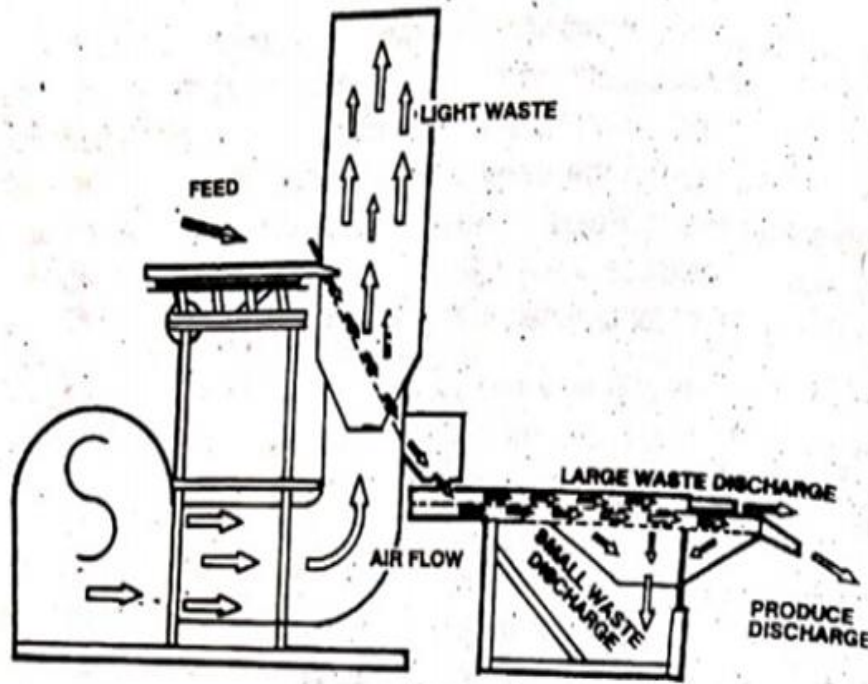


Fig 2. Principles of operation of combined pneumatic and screen separator

c) Magnetic cleaning

- Magnetic cleaning is the removal of ferrous metal
- Metal particles, derived from the growing field or picked up during transport or preliminary operations, constitute a hazard both to the consumer and to processing machinery
- Particulate foods may be passed over magnetised conveyor belts, or powerful magnets may be located above conveyors.

Electromagnetic cleaning



d) Electrostatic cleaning

Electrostatic cleaning can be used in a limited number of cases where the surface charge on raw materials differs from contaminating particles.

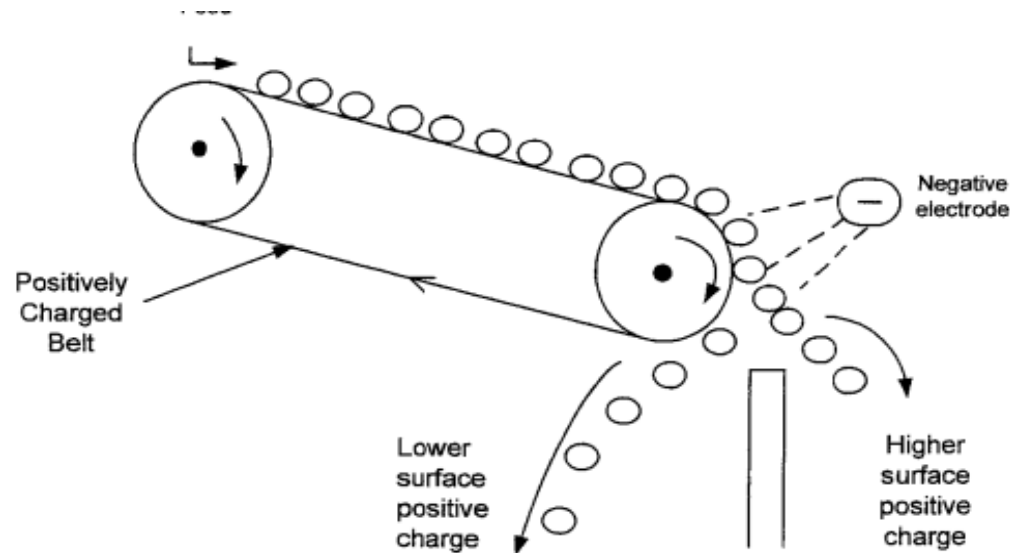


Fig. 1.4 Principle of electrostatic cleaning.

is conveyed on a charged belt and charged particles are attracted to an oppositely charged electrode (see Fig. 1.4) according to their surface charge.

e) Abrasion and Brushing



2. Wet Cleaning Methods

Wet methods are necessary if large quantities of soil are to be removed

Common wet cleaning methods are

- (a) Soaking
- (b) Spray washing
- (c) Floatation
- (d) Filtration
- (e) Ultrasonic cleaning

a) Soaking

Soaking is a preliminary stage in cleaning heavily contaminated materials, such as root crops, permitting softening of the soil and partial removal of stones and other contaminants



b) Spray washing

Efficiency depends on the

- Volume and temperature of the water
- Time of exposure to water
- Distance between the food and spray shower

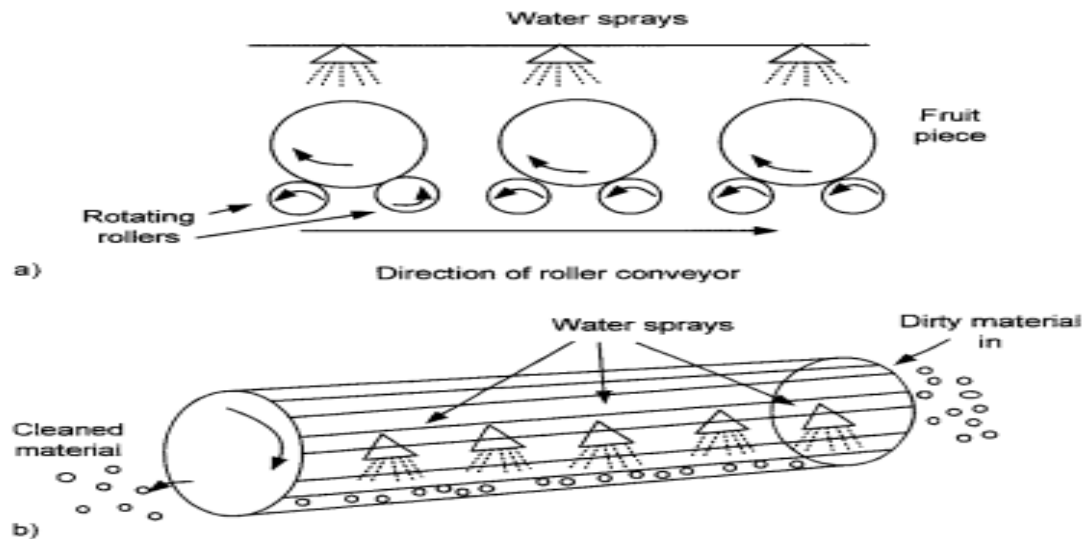


Fig. 1.5 Water spray cleaning: (a) spray belt washer, (b) drum washer.

Floatation and sedimentation

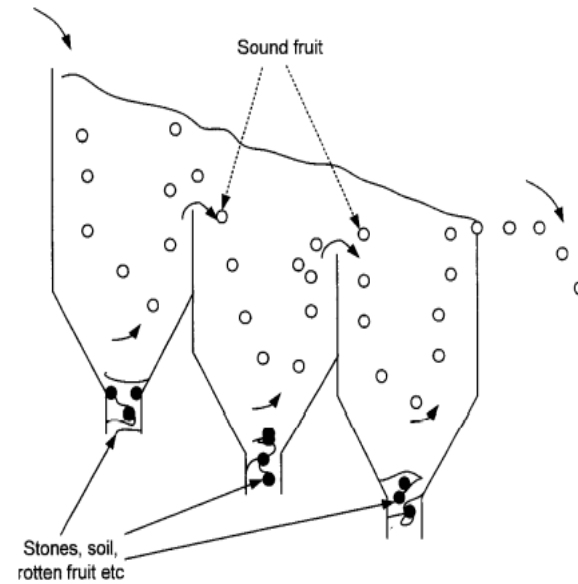
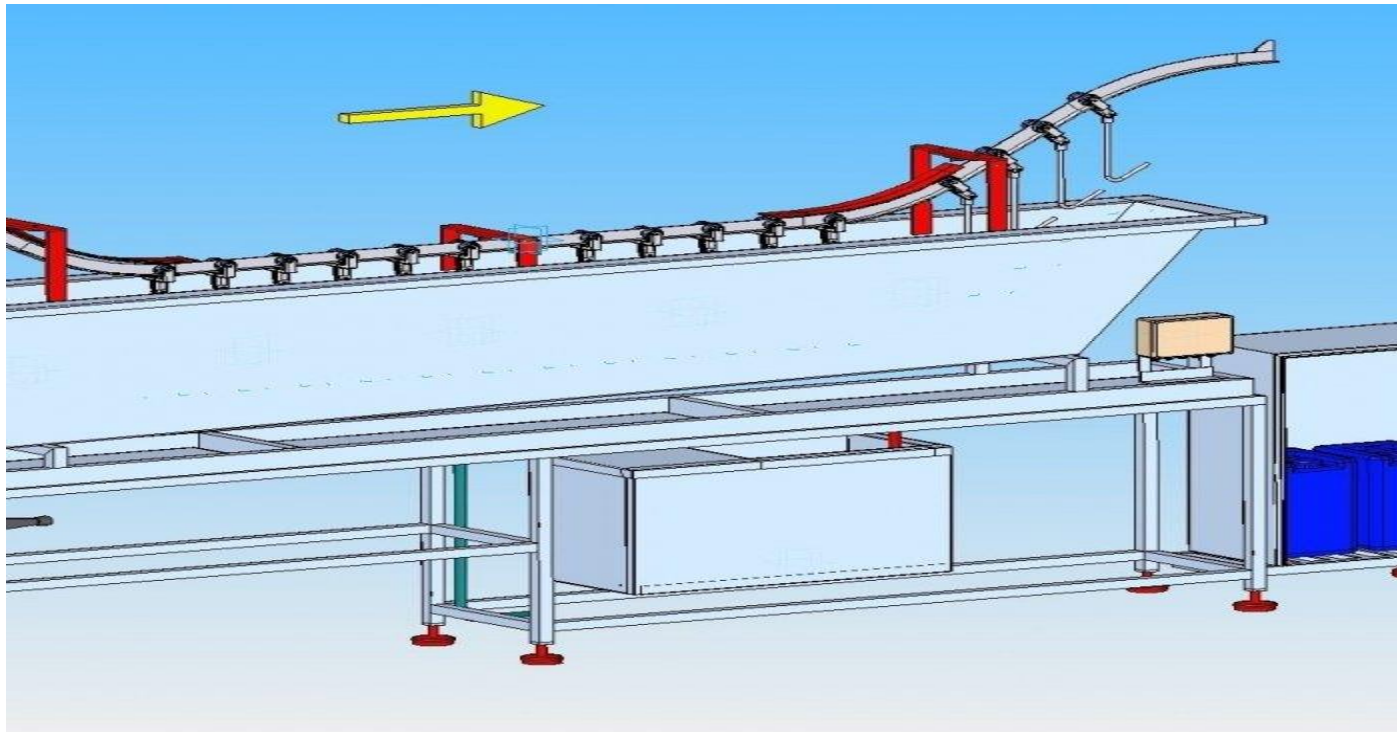


Fig. 1.6 Principle of flotation washing.

Ultrasonic Cleaning

- Ultrasonic waves are introduced
- 16 KHz to 100 KHz



Filtration

- Contaminants from fresh milk
- Fruit juices

