Discussion on the present situation of shelling machine and the method of improving effect

Shelling is a process that must be carried out before deep processing of shelled materials. Shelling of almonds is very important but difficult in the processing of agricultural products. Therefore, this paper only discusses shelling of almonds. The most representative almonds in China are walnuts, almonds, white nuts and pine nuts, and similar ones are chestnuts. For convenience of research, we call these fruits almonds. These fruits are rich in nutrition, unique in taste, and have certain medicinal value. They are increasingly welcomed and loved by people, and their yields have increased substantially year by year.

In the process of deep processing, shelling of raw materials is an important and difficult process. This kind of almond has a large proportion of shell weight, low nutrient content, few edible components directly processed, and the existence of shell seriously hinders the extraction of effective components in the process. In recent years, some processing enterprises and scientific research institutes in China have gradually developed some almond shelling processing equipment, such as microwave drying machinery, but most shelling machines have a low one-time shelling rate, crushing. The high rate of kernels leads to low production efficiency and great loss of processing.

This study introduced the structure characteristics and working principle of several typical almond shelling machines in China. Through analyzing their present situation and existing problems, and combining with experiments, the improvement methods were discussed in order to improve the shelling effect of almond and provide extrusion shelling machines for almond processing. It is mainly composed of grading drum, guiding mechanism, shell breaking mechanism, transmission mechanism and power, which form a system operation pipeline from top to bottom depending on the gravity of the material itself.

When working, the walnut from the hopper into the conical grading cylinder of different sizes by grading roller cone walnut walnut according to classification, from large to small along the cone axis from small to large cone arranged, with tapered drum rotating to the guide roller, and then enter the extrusion roller, machine is discharged through the extrusion roller extrusion after the shell is broken. Working parts are turntable (discs) and baffles. Fruit with 0.037 m /s speed can be adjusted by the general material door falls from the centre to enter, by block or blade oriented high speed turntable and the acceleration, speed dial out.

When the fruit with a large centrifugal force hit the wall, the wall facing the fruit from an equal reaction, the fruit shell deformation and crack formation. The elastic deformation of the shell to restore the fruit leave the wall, while the role of nuts by inertial force continues to move forward, and in close proximity to the shell deformation produces elastic deformation. When the fruit left wall, the shell and the nuts with different elasticity, its velocity is different, resulting in the nuts will prevent shell quickly back into the mobile shell in the crack open shell rupture, complete stripping. The impact type hulling machine when the outer edge of the circle line turntable speed is 30 to 38 m /s, suitable for pine nut sheller.