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A Review paper on potato chips making machine

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Abstract: *In food production process of potato mostly used machinery for high production rate and hygienity is the biggest task in production. In rural area specially in Maharashtra , the food made by potato is mostly used in daily rooting that's way small production forming industry will be formed .These small industry will having requirement of proper skills about it for increasing rate of cutting chips with minimum manual effort that times it was used sharp edges of cutter by the operator due to this production rate was not better and producing slice having thickness which has unequal . After some days automatic production machine used that time using produces more production in short time and having minimum labour effort .Due to this more time will be consumed with new idea of production which is effective and hygienic way of chips production . In machine using hopper , chopper unit , conveying system , drive & power transmission unit .The hopper is storing device in which potato store easily & it will be supply with help of conveying system by using power supply by the source by the driving element .The conveying system is directly supply potato to the chopper disk then potato slice will be formed .When potato supplied through the chopper cutter (rotary cutter) the compressive force of spring attach inside of conveyer then slice are obtain.*

Keywords:- *potato slice ,chopper, conveying system, chopper , potato ,cutting blade.*

I. Introduction

In India mostly land is used for farming that's way used vegetables in our daily life specially fruits ,green vegetables, dry and fast foods. The potato is one of vegetable is used in daily life for breakfast, dinner and in fast also, according to Technology Research Centre in the world says that the potato is the king of all vegetable because it contain Solanum Tuberosum & near about 80% of water and 20% of dry matter. The dry matter is highly edible protein content which makes it as nutritionally superior vegetables & staple food not only in our country but also in the whole world. [1]

The food making by the potato which is famous and demanding in the market like chips , snacks and slade etc .but potato chip is one of best item because it is easy selling by the customer and it has very less in prize . For the formation of chips by the formal method using first machine which contain knife or sets of knives it will arranged in particular pattern but it will be very time consuming and need of more effort. That's way providing more internal effort and for improving process required special tools and technique this will be reliable , efficient ,saving labour effort ,safe and cost effective. In the formation of slice which can be adopted mechanical energy as a input and improving product quality and quantity.[2]

The food made by potatoes which has the account for overall of near about $ 2 to 2.5 billion dollars according to World Research Centre and Technology (WRCAT). The production of potato slice by the machine increasing the productivity by less power consuming in short period of time . In the machine used hopper ,conveying system ,chopper disk and power transmission system. In automatic power supply by the power source at same speed driver pulley rotates and forming slices of at same amount by driven pulley.

1.1 Aim:-
Making of potato chips machine for larger scale

1.2 Objective
- To reduce manual effort
- To achieve large production of potato chips
- Portability of machine

- Low cost production
- Time consuming

II. Literature Review

Kamlesh Pradhan et . al. [1] says that in the semi automated potato chip slicing machine all component design on the basis of its structural strength and function because it has the capacity to design and developed semi automated machine. When 5 to 7 cm size of potato put in the hopper the conveying system supply the potato sequentially on chopper disk after starting the process. When power transmission system supply 1/12 hrs power by the motor to and the chopper disk is rotated because it is mounted on the shaft and that shaft will be rotated by the driven belt pulley mechanism. The potatoes and slicing wheel having small clearance and cutting blades of slicing disk will comes in contact with potatoes then cuts the potato and after that forming slice of it. In the cutting process involves shearing force application on the potatoes with the help of blade which is mounted on chopper disk.[1].

Atul Anand Mishra et .al.[2] says that in the twisted potato crisp maker machine will be design on the basis of various criteria like cost of material and local availability of material, mechanical properties of components (like strength, ductility toughness, rigidity etc.)and machine ability and formation of crisp. At which using tools as Longitudinal Stud , Cutting Blade ,Stud support , Clipper etc. in the slice formation using potato as a raw material . when slice form at the behind position of blade which is spiral in shapes that time shearing force act on the potato by the blade & blade which is in stationary passion .the shearing force always required for cutting action of potato with help of knife and it produced 0.0164mm of crisp. In the design and fabrication of crisp making machine of production capacity was varies from 9.375kg /hrs and it has average capacity of production near about 9.577 kg/hrs. [2]

Vishal Wadagavi et .al.[3] says that in the auto mated potato chips making machine potato chips formation with complete all te all process like peeling, washing , frying and flavouring , we used only a process in our project model. In that machine potatoes were delivered by the conventional way, in a first step we de-stoned and peeled in side the hopper after that washing very carefully with cold water. Then in a next step cleaned potato supplied to the copper disk with the help of conveying system & chopper disk consist of potato holder. When potato holded on the chopper disk ,the compressive spring pushed to the potato and rotates the blade which is mounted on the chopper. Potatoes are the forced against the blade by compressive spring mechanism will be engaged by manually.

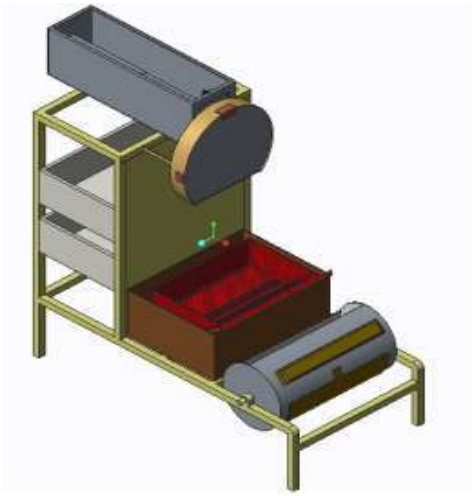

Fig (3.1) : 3D model of automated potato chips maker machine

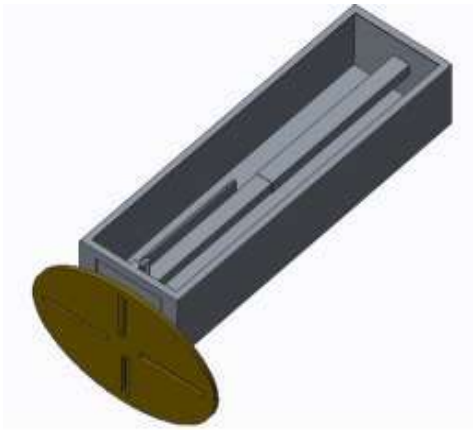

Fig (3.2) : Chopper Unit

In the automatic potato chips making machine , the capacity of machine when 0.5 kg of potato used in 1 cycle : 7 min required for the completing all process. From that it is clear that in home industry 32 kg of production produced in per day.

Fig (3.3) : Hopper Slicing disk

Fig (3.4) : Potatoes

This complete machine will be design on the basis of technical ideas of complete process and PLC machine used for reduction of man power which have the satisfied the need in home industries.

Roshan M. Hatwar et.al. [4] says that the Design and development of semi automated potato slicing machine in which main components are use such as hopper, conveying system , leverage mechanism ,slicing wheel(chopper),and power transmission system etc. The design of machine which is based on the component having structural strength and its function

Fig (4.1) : Hopper

Fig (4.2) : Slicing Wheel (Chopper)

The hopper is used which is rectangular in shape and tapered from bottom and use for storage of potato. Slicing wheel it consist of circular plate and use as a slicing wheel which has three cutting blade mounted on the disc .slicing blade is powder coated for maintaining hygiene and avoid chemical reaction forming on it. Production capacity of this machine found that 60kg/hr . It is a combination of rotary and longitudinal motion produce by electric motor(power transmission system and leverage mechanism. The maximum shear force used for cutting action by the blade.

Aung Ko Latt et. al . [5] says that in the design and construction of potato slicing machine was consist of tunnel section, rotary cutting blade ,primary cutting blade ,shaft with pulley ,belt and frame with casing. In which tunnel section is called as conveying system means i delivered potato from store to wheel of rotary cutting blade with the help of gravitation force. In which slicing wheel was used with two cutting blades and which is made up of aluminium alloy which maintain hygiene and protected from chemical reaction of the weather. The capacity of potato slicing machine produces 4.3 kg/min of potato slice when 1.1 kW of power is used . it gives 3mm thickness of slice with 88% of overall efficiency.

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