

Fabrication of Dry Garlic Peeler Machine

Mayur M. Dighore¹, Shubham S. Sonwane², Vilas A. Shivarkar³, Devendra P. Bhasharkar⁴, Swapnil Marathe⁵

^{1,2,3,4} *Diploma Student of Mechanical Engg, V.I.T Uti Nagpur road, Umred, Maharashtra, India*

⁵ *Assf. prof. of mechanical Engg, V.I.T Uti Nagpur road, Umred, Maharashtra, India*

Abstract- This invention is a new proposed model of peeling the garlic skins with mechanical functionality. Working with the simple and basic mechanism, this is used to peel the skin of garlic cloves. This device consists of components like motor, connecting rods, metallic cylindrical box and side frames for reciprocation of the cylindrical box. It reduces the time consumption and protects the fingers from the health issues like irritation in fingers and nail breakings.

Index Terms- HVAC, PAM.

I. INTRODUCTION

India is one of the leading Garlic producing countries. The area under cultivation and production of garlic in India (2010-11) is 200.70 thousand ha and 1061.85 thousand tons. Madhya Pradesh, Gujarat, Orissa, Rajasthan, Karnataka, Tamil Nadu, Maharashtra, Bihar and UP are the major Garlic producing states. Study revealed that the area and production of garlic is increasing in most of the states. Garlic is the most important foreign exchange earning spicy vegetable crop, commercially grown in India. Indian garlic is now exported even to Pakistan, Thailand, and USA, Nepal and Malaysia as well as the traditional market of Bangladesh. About 21,827.16 metric tons of Garlic bulbs amounting to Rs.7, 731.52 lakhs were exported during 2010-11. During the year 2006-07, the export of dehydrated powder and flakes was to the tune of 780 tons worth Rs. 437 lakhs and 188 tons worth Rs. 108 lakhs respectively.

Garlic has digestive, carminative and ant rheumatic properties. It is used in aurvedic formulation since ancient times for curing muscular pain, giddiness, lungs, heating intestinal ulcer, etc. Garlic is consumed as green as well as dried in the spice form and as ingredient to flavor the various vegetarian, non-vegetarian dishes and pickles. Good tasty pickles, chutneys, curry powders are prepared from

Garlic cloves. Garlic is also used to disguise the smell and flavor of salted meat and fish. Dehydrated Garlic in powdered or granulated form is being used in place of fresh bulbs in many countries. Since the cost of fresh Garlic is widely fluctuating (Rs 5 to Rs 100 in a year), simple process technology need to be made available for preparing quality products with long shelf life from Garlic during the season for their use in off-season. Further because lack of available time for kitchen work, the demand for ready to use product is increasing with increase in number working women in urban areas.

II. NEED OF PROJECT

In Process industries and robotics and other applications, technology have been utilize in several purpose to carry out operation of opening and closing. Out of this technology is important one, in fast life where time is a first important factor, we need to utilize automation technology for future growth. Keeping this factors in mind it has been found that pneumatic technology can be deliberately used to have very effective and good result bout his work and cost effectiveness. By imagine lot of examples one example is that today we show various type of doors such as sliding, revolving, swing, folding etc., all of these examples utilize complicated mechanisms for closing or opening operations hence to overcome this, we can use simple technology to do the required work.

III. SPECIFICATION OF COMPONENTS

A. Ac Motor:



The universal motor is a type of electric motor that can operate on either AC or DC power and uses an electromagnet as its stator to create its magnetic field. It is a commutated series-wound motor where the stator's field coils are connected in series with the rotor windings through a commutator. It is often referred to as an AC series motor. The universal motor is very similar to a DC series motor in construction, but is modified slightly to allow the motor to operate properly on AC power. This type of electric motor can operate well on AC because the current in both the field coils and the armature (and the resultant magnetic fields) will alternate (reverse polarity) synchronously with the supply. Hence the resulting mechanical force will occur in a consistent direction of rotation, independent of the direction of applied voltage, but determined by the commutator and polarity of the field coils

Universal motors have high starting torque, can run at high speed, and are lightweight and compact. They are commonly used in portable power tools and equipment, as well as many household appliances. They're also relatively easy to control, electromechanically using tapped coils, or electronically. However, the commutator has brushes that wear, so they are much less often used for equipment that is in continuous use. In addition, partly because of the commutator, universal motors are typically very noisy, both acoustically and electromagnetically.

B. Centrifugal Fan:



A centrifugal fan is a mechanical device for moving air or other gases in a direction at an angle to the incoming fluid. Centrifugal fans often contain a ducted housing to direct outgoing air in a specific direction or across a heat sink; such a fan is also called a blower fan, biscuit blower, or squirrel-cage fan (because it looks like a hamster wheel). These

fans increase the speed and volume of an air stream with the rotating impellers.

Centrifugal fans use the kinetic energy of the impellers to increase the volume of the air stream, which in turn moves against the resistance caused by ducts, dampers and other components. Centrifugal fans displace air radially, changing the direction (typically by 90°) of the airflow. They are sturdy, quiet, reliable, and capable of operating over a wide range of conditions.

Centrifugal fans are constant-displacement or constant-volume devices, meaning that, at a constant fan speed, a centrifugal fan moves a relatively constant volume of air rather than a constant mass. This means that the air velocity in a system is fixed even though the mass flow rate through the fan is not. Centrifugal fans are not positive-displacement devices and centrifugal fans have certain advantages and disadvantages when contrasted with positive-displacement blowers: centrifugal fans are more efficient, whereas positive-displacement blowers may have a lower capital cost.

The centrifugal fan is one of the most widely used fans. Centrifugal fans are by far the most prevalent type of fan used in the HVAC industry today. They are often cheaper than axial fans and simpler in construction. They are used in transporting gas or materials and in ventilation systems for buildings and vehicles. They are also well-suited for industrial processes and air pollution control systems.

C. Cylindrical Box:



Cast iron pipe is a pipe which has had historic use as a pressure pipe for transmission of water, gas and sewage, and as a water drainage pipe during the 19th and 20th centuries. It comprises predominantly a gray cast iron tube and was frequently used uncoated, although later coating and lining reduced corrosion and improve hydraulics. Cast iron pipe was superseded by ductile iron pipe, which is direct

development, with most exiting manufacturing plants transition to the new material during the 1970s and 1980s. Little cast iron pipe is currently manufactured. The oldest cast iron water pipe date from the 17th century and were installed to distribute water throughout the gardens of the chateau de Versailles . These amount to some 35 km of pipe, typically 1 m lengths with flanged joints. The extreme age of these pipe make them of considerable historical value. Despite extensive refurbishment in 2008 by saint – goblin PAM, 80% remain original.

Cast iron proved to be a beneficial material for the manufacture of water pipes and used as are replacement for the original elm pipelines utilized earlier .these water pipeline were composed of individually cast iron section, often termed strikes, jointed together by a bell and spigot joint. Here one end of the pipe stick is flared, termed the bell or socket, to enable the opposite end of the next stick the spigot end to be insured to create a joint. The gaps in these joints was then run around the socket to ensure that the oakum seal remained in place.

D. Kinematic Link:



A definition from kinematic link each resistant body in a machine which moves relative to another resistant body is called as kinematic link or element .A resistance body is one which does not go under deformation while transmitting the force. Kinematic links can be divide into three types:

- Rigid link – In this type of link there is no deformation while transmitting the motion. Motion between the piston and crank can be considered as a rigid link.
- Flexible link – In this type of link there is partial deformation while transmitting the motion. Belt drive is an example of flexible link.
- Fluid link – In this type of link the motion is transmitted with the help of fluid pressure. Hydraulic brake is an example of fluid link.

E. Regulator (Speed Controller):



A voltage regulator is an electronic circuit that provides a stable DC voltage independent of the load current, temperature and AC line voltage variation. A voltage regulator may use a simple feed forward design or may include negative feedback. It may use an electromechanically mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltage.

Electronic voltage regulators are found in devices such as computer power supplies where they stabilize the DC voltage used by the processor and other elements. In automobile alternators and central power station generator plants, voltage regulators control the output of the plant. In electric power distribution system, voltage regulators may be installed at a substation or along distribution lines so that all customers receive steady voltage independent of how much power is drawn from the line.

F. Push Button



This type of buttons are used for switching the blower on/off.

IV. ADVANTAGE

1. Compact
2. Portable
3. Reduce time consumption
4. Eco friendly
5. Can peel without damage
6. Less energy consumption
7. Cost effective
8. Less maintenance required
9. Risk free and easy to use

V. APPLICATION

1. It is used in industries.
2. It is used in restaurants and hotels.
3. It is used in kitchens.
4. It is also used in food shops.

VI. OBJECTIVE

1. To increase the efficiency.
2. To reduce the hard work.
3. To reduced time to peel dry garlic.
4. To develop a low cost machine which can be used by farmer to convert their semi – finished corn into finished product.
5. It satisfies the need of village people to earn more money.

VII. CONCLUSION

The traditional peeling methods of garlic are more time consuming, laborious and cost intensive than the power operated garlic peeler developed in the present study. The saving in cost and time of peeling of a kg of garlic with the use of the developed peeler was found to be Rs 16.11 and 1.63 machine hours, respectively i.e. 94.99 and 97 % of the cost associated with hand peeling. The developed garlic peeler may be utilized in garlic processing industries, big restaurants, and hotels. The damaged garlic during machine peeling shall not be counted as product loss and damaged garlic may be used for immediate use for making value added product like garlic paste, garlic salt, garlic powder, pickles etc.

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BIOGRAPHIES:



Mr. Mayur M. Dighore pursuing in Diploma (Mechanical Engineering), MSBTE, Mumbai.



Mr. Shubham S. Sonwane pursuing in Diploma (Mechanical Engineering), MSBTE, Mumbai.



Mr. Vilas A. Shivarkar pursuing in Diploma (Mechanical Engineering), MSBTE, Mumbai.



Mr. Devendra P. Bhasharkar pursuing in Diploma (Mechanical Engineering), MSBTE, Mumbai.