

A RESEARCH ON BEEKEEPING

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Abstract - In this paper we study about existing bee-hive working. The research provide about modification done by researchers. The research considers gaps in research. Crop yield is increased. For rural people sustainable livelihood provided by beekeeping. Beekeeping does not require land ownership. Traditional method of honey harvesting is studied. Advantage of plastic honey comb studied. Theory behind the design is studied. Sliding motion mechanism is studied. Production of polylactic acid is studied. From beehive how much amount of honey and other product is studied. Existing beehive system are is easy to use and automatic but price is more. So we are trying to make new instrument which is easy to use automatic as well as price is less. Improved beehive how better than conventional beehive that are studied.

Key Words: Fire and smoke, colony, clay pot, sustainable livelihood, rural.

1. INTRODUCTION

Beekeeping provide sustainable livelihood to small scale farmers and other rural and non rural people. Large potential with minimum investment. Beekeeping does not require land ownership or rental. Crop pollination is also done.

1st method- Use a fire and smoke-Rid the bees from the nests

Disadvantage-It can destroy the entire colony.

2nd Method - Simple hole in wall. Clay pot and basket attached to the tree branch.

3rd method-Beekeeping using purposely made hive.

2. EXISTING BEE HIVE WORKING-

In 18 century scientific study of life of honeybee started. Scientist name is Swammerdam, Rene Antoine. Basically hives are different in only size. Size of frame as well as number of frame is different in hives. Typically 12,16 or 24 frames are present. Langstroth L.L. is considered as a founder of beekeeping. In 1865 Francesco De Hruschka invented first centrifugal honey extractor. Light colored costumes, headpiece with protective nesting, gloves and smoker is used to avoid bee sting. Frameless honey production is used by modern technical beekeeping. Upper bracket which contain longitudinal groove in which wax is poured. Construction of new honeycomb is guided to be by these groove.

Pressed honey is better. Fragrant is more. Obtained by using honey extractor. Bees do not swarm is the positive aspect of this method no time is wasted or no cost for honeycombs do not need place.

Backyard beekeeping is good and cost effective. Honey picking lasts 3-4 months and main harvest last 1-1.5 months. Time and effort can not spend by Siberian bees. Beekeeper help to built a honey comb. In Siberia summer is short.

Plastic honeycomb are present in Russia. Modern technical tool belongs frame in Canada and United States also plastic honeycomb is used.

2.1 ADVANTAGE USING PLASTIC HONEY COMBS

1. Does not need to weld honeycomb to the frame.
2. Wire is stretched on the frame.
3. Wax is inserted into the frame.
4. During honey pumping plastic combs withstand greater load.
5. Losses from moths are smaller.
6. There is regular shape to honeycomb and under the weight of honey it not changed.
7. These honeycomb are reusable.

Winter is the best time to move the beehive. Because bees are not flying wait till dusk when all bees are in the colony. New location hive should move fewer than three feet or over three miles.

Queen bee is a leader. Followers are the worker bee. Worker bee is reproduced by worker bees. Drones are also created. Pollen and nectar are gathered by worker bee. One bait hive is put, change in location is adjusted by bees. When you are ready we remove frames from bait hive to permanent hive. Above a brood chamber four and five supers are present. Hives should be moved less than 2 miles and more than 2 feet beehive is located. Take a help of beekeeper. Bees should be smoked out. To get rid of beehives use soap and water solution. Burn paper and wood under the beehive at night. All bee attracting structure is removed. Bees are perennial insets that survive more than one year. They build complex hive. In rock crevices and hollow trees wild

honey bee make a hive by chewing wax until it becomes soft, they construct hives.

3. MODIFICATION DONE BY RESEARCHERS

1. Valley Bee Supply 10 Frame Beehive New England- pine is used to make this beehive. It is not finishing and unassembled it is designed for the pro beekeeper. Valley bee supply beehive contain 2 deep boxes and 3 medium size boxes. Hive box is made from high grade plywood aluminium is used for roof and it comes reassembled just like bottom board, slide out trays and inner cover.

2. Happybuy 2 Layer Beehive 10 Frames Beehive Starter Kit-It is made of pine wood and measures 24.5*20*16 inches and weight 16-18 kgs. 2 windows for viewing the hive, one deep brood box viewing the hive, one deep brood box, an entrance reducer, a solid bottom board and inner cover. It is easy to remove honey comb with traditional beehive.

3. Vivo Be-Hvol Complete Hive Kit-Bees need ideal environment to nourish themselves. Young one need specific moisture and temperature. In this beehive all bees get nourished and thrive. It is made by from soft pine. Queen excluder is used which protect the queen from intruders or invaders. It contain 10 medium and 10 deep frame. Bottom board, metal cover and inner cover is also used.

4. Popsport Beehive Wooden House 20 Frame Complete Box Kit-There is 10 deep and 10 medium frames. Frame are made of white pine or premium firewood is used for hive super. The unit has an entrance reducer and bottom which help secure the hive from insects and predators. Box kit is notable feature of this beehive. Beehive has a dimension of 11.42*20.87*23.62 inches and weight 45 pounds frames are easy to remove and install.

5. Best-Equip Wooden Honey Bee House-It is ingeniously designed beehive. It increases productivity of bees. 20*16*10 inches this unit is used. It is easy to remove as well as install. Excellent quality of corrosion resistant pine wood is used.

6. Existing Beehive Classic Langstroth 6 Frame Beehive-classic cedar of a existing beehive is 6 frame. Western red cedar which resistant to fungus and prevent from insect invaders. It also has a queen excluder, bottom board, roofing.

4. GAPS IN LITERATURE-It is not suitable for Indian bees (*Apis cerena indica*). Many researchers have tried to improve the beehive design for increased yield, easy to handle mechanism. Not much work is done on beehive of small capacity for use in Indian condition. In this research paper a new design suitable for Indian bees is created

5. DESIGN OF RESEARCH

Mechanism1-

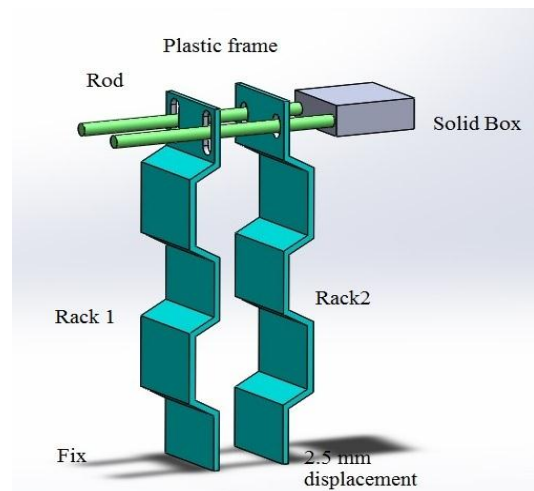


Fig-1-Beehive using upward force mechanism

There are 'n' number of frames present in existing beehive structure. Half part of vertical hexagonal structure is fixed and other half part has vertical upward downward movement as shown in fig.

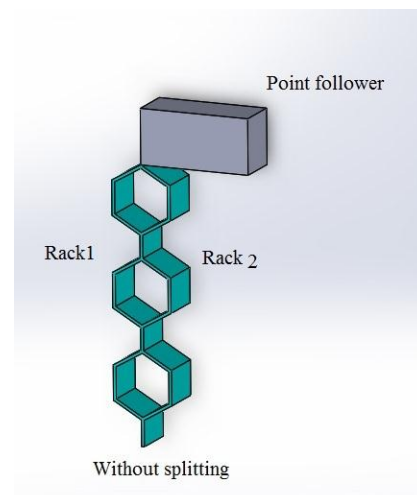
Rack 1 of this structure is fixed and Rack 2 has vertical hexagonal structure which is not fixed, have plastic frame on this frame holes are provided. Through that holes rod is passed and rod is attached to the solid box and elliptical slot on fixed frame. So there is vertical movement of rod through it. Fixed structure remains fixed. At the end of this rod there is handle to have good grip.

Advantages- 1) Easy mechanism.

2) Hand made mechanism.

Disadvantages- 1) Bending problem.

Mechanism-2



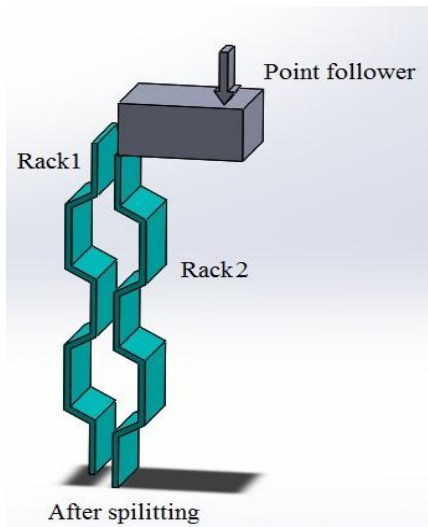


Fig-2-Behive using cam and follower mechanism.

This is a cam follower mechanism.

We will use point follower.

A cam and follower mechanism is profiled shape mounted on a shaft. That causes a lever or follower to move cams which are used to convert rotary to linear(Reciprocating) motion. As the cam rotates, the follower rises and falls in a process known as reciprocating motion.

Point follower-When the contacting end of the follower is a point. It is called point follower. The sliding motion takes place between the contacting surfaces. It is seldom used in practice because the small area of contacting surface result excessive wear.

Disadvantages - 1) Not splitting mechanism.

Mechanism 3-

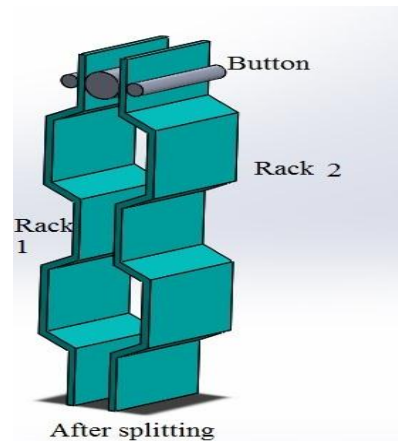
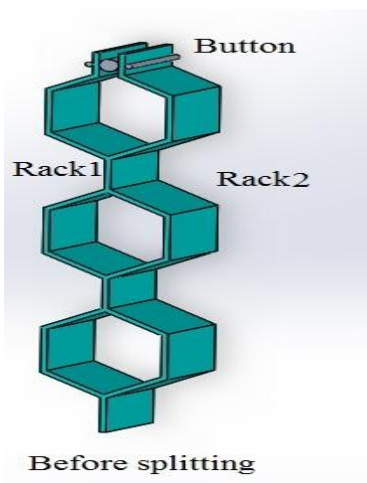


Fig-3-Behive using splitting mechanism

There are two racks are present such as rack1 and rack 2. Before splitting they are joined. Button is provided on top of two frame joint. When button is turned to right side splitting takes place. And rack 2 goes downward direction, rack 1 is fixed hence honey is collected in semicircular pipe provided at the bottom.

Advantages-1) Easy mechanism. Hand made mechanism.

Disadvantages-1) Every place we should required a button so it is expensive mechanism.

Mechanism 4

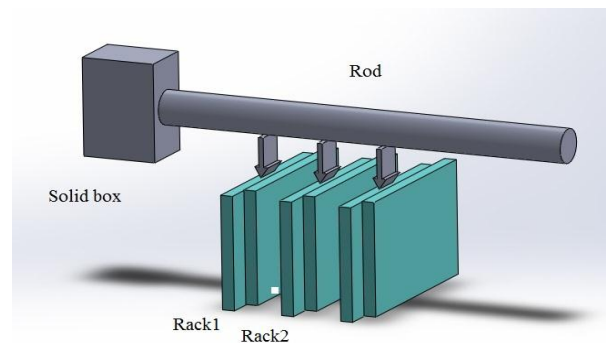


Fig-4-Behive using downward force mechanism

The structure is same as mechanism 3. There are so many racks are present. Only instead of button rod is provided to which small rod like structure is attached when we apply a force odd number racks goes downward where as even no racks are fixed. Hence splitting takes place honey can be collected in semicircular pipe.

Advantages - 1) It is easy mechanism.

Disadvantages -1) Required more force.

2) Required more material.

3) Buckling takes place.

Mechanism 5

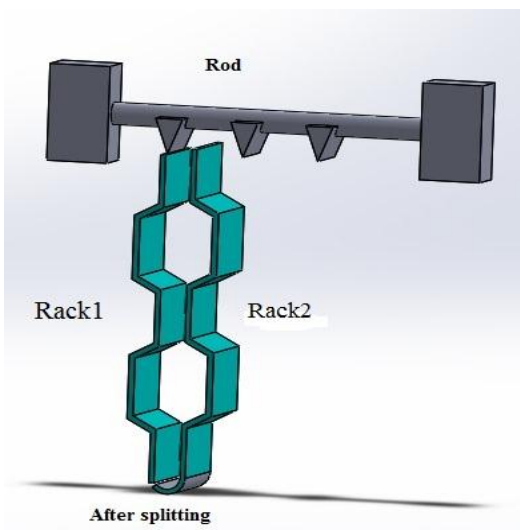
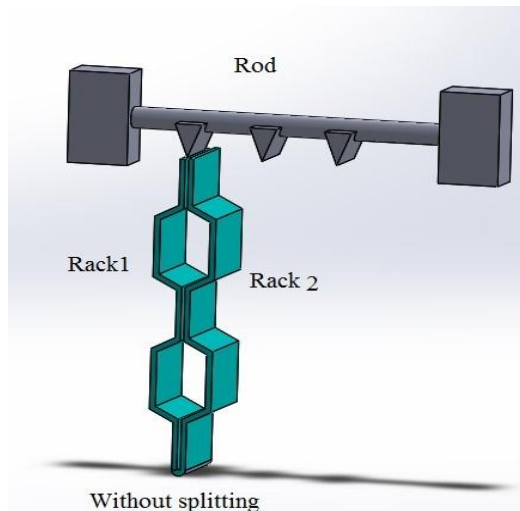


Fig-5-Beehive using downward force mechanism

A plate to which V like structure is present. One rack (frame) is fixed on semicircular pipe and another move up and down and when we apply a force splitting take place and we get honey in semicircular pipe.

Advantages-1) Handmade mechanism

2) Quick mechanism.

Disadvantages-1) complicated mechanism.

2) So many parts are present assembly is complicated.

Mechanism 6-

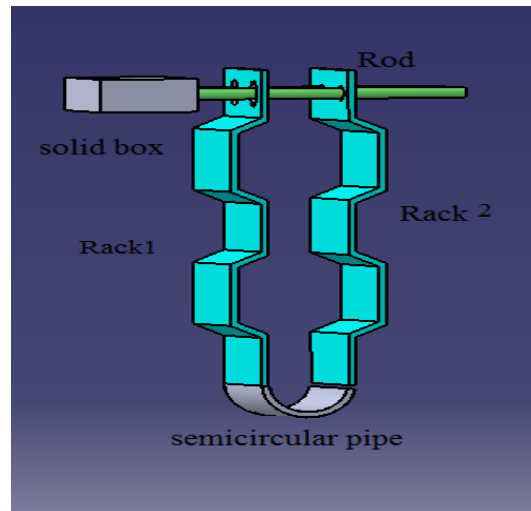


Fig-6-Beehive using upward force mechanism

So many racks(frames) are present. Odd number of racks are fixed and even number rack is movable. When we give upward force even number racks goes upward direction splitting takes place and we get honey in semicircular pipe.

Advantages-1) It is cheap.

2) It is Hand-Made mechanism.

3) It is simple.

Mechanism -7

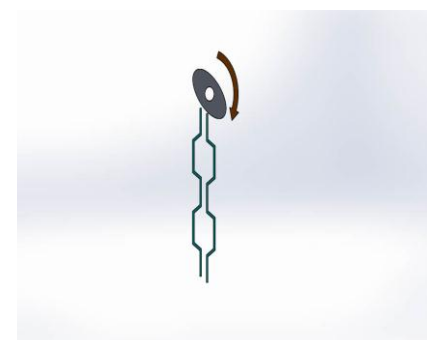
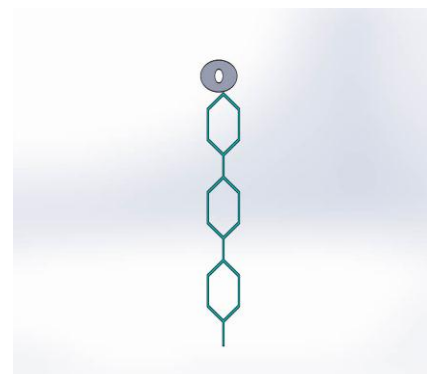


Fig-7-Beehive using cam and follower mechanism

There are so many racks are present moving header and fixed header this two type header is present. When mechanism is not splitting that time hexagonal structure is formed. Cam is present and when we turn cam right side splitting take place & moving header goes upward direction & honey is collected in semicircular pipe.

Advantages-1) It is cheap.

2) It is Sliding mechanism.

3) It is simple.

6. THEORY BEHIND THE DESIGN

Sliding motion mechanism –breaking of honey structure by using sliding motion to extract the honey without disturbing the structure. Sliding motion it is a type of frictional motion between two surfaces in contact. Coefficient of rolling friction value are less than that of sliding Friction value. Sliding motion is contrasted to rolling motion. In bearing both type motion occur. Due to friction two surfaces is resisted. Friction may wear or damage a surface in contact. Due to use of lubrication we reduce a wear. Tribology means the science and technology of friction, wear and lubrication in two objects of arbitrary shape sliding may occur. The frictional force associated with the rotational movement of a somewhat circular or other disc like object along a surface is called rolling friction. In rolling friction frictional force is less than sliding kinetic friction. Coefficient of rolling friction value is less than sliding friction. Greater sound is produced by sliding friction. Braking motor vehicle tires on a roadways it is example of sliding motion heat and sound is generated by this process.

Kinetic friction is also called as a sliding friction. In object and surface and two objects sliding motion is used. Static friction is always greater than sliding friction.

7. POLYLACTIC ACID-polylactic acid or polylactide (PLA) is a thermoplastic. From renewable biomass aliphatic, typically from fermented plant starch such as cassava sugar pulp, sugarcane we made polyester.

8. PRODUCTION-Two main monomers are used lactic acid and the cyclic di-ester lactide direct condensation of lactic acid monomers we can produce PLA. Less than 200° c temp process needs carried out. Polylactic acid is used in medical implants and food handling. It is biodegradable. Like a most plastic polylactic acid is toxic. Generally PLA recognized as safe. Small amount of lactic into food released by PLA.

9. BENEFITS OF IMPROVED BEEHIVE

1. In conventional beehive growth of bees do not take place but improved beehive growth of bees take place .

2. Problem of maintenance of rack come in conventional beehive but in improved beehive no maintenance problem come.

3. In conventional beehive division does not occurs fast, but improved beehive division occurs fast.

4. In conventional beehive diseases are present also we can not protect bees from enemy but improved beehive diseases are present less and we can protect bees from enemy.

5. Wax moth present in conventional beehive but wax moth are not present in improved beehive.

Product Name	Cerana in natural beehive(1 year result)
Honey	1 Kilo
Royal jelly	50 gram
Pollination	2.02 hectar

1-Testing of cerana in natural beehive for 1 year

Product Name	Mellifera in natural (1 year result)
Honey	40 Kilo
Wax	500 gram
Bee-venom	30 ml
Pollen	1 Kilo
Royal jelly	80 gram
Pollination	2.02 hectar

2-Testing of mellifera in natural beehive for 1 year

Sr.No.	Product Name	Natural Rack	Improved Rack
1	Honey	60 gram	70 gram
2	Pollination	2.02 hectare	2.02 hectare

3-Testing in month September by Apis Cerana from 1 rack

Sr.No.	Product Name	Natural Rack	Improved Rack
1	Honey	70 gram	80 gram
2	Pollination	2.02 hectare	2.02 hectare

4-Testing in month October by Apis Cerana from 1 rack

10. CONCLUSION- We study traditional beekeeping method. We study conventional beehive working and background of beekeeping also studied. Pollination, beekeeping at household level, enhancing local skills, knowledge and traditions, integration into the farming system, dietary contribution, traditional medicinal value, improved income, Social benefits, Environmental benefits this are benefits of beekeeping studied. Modification done in beehive by scientist this is also studied. Beekeeping in different country is studied. Different type of bees and yield come from that bees are studied. Improved beehive works satisfactorily in the controlled environment. Honey collection is move in

improved beehive by 10% compared to conventional beehive. Bees find it difficult to close the cell. This may be due to material of beehive. More study with different configuration and hive material is required to create a simple to use household beehive.

11. REFERENCES

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