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Design and Fabrication of Cattle Feed Making Machine

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Abstract: The cattle feed making machine is designed to overcome the difficulties due to labour shortage and to increase the white revolution. The primary benefit of this machine is to do work more efficient in order to suffice the manual source. For livestock it is in the form of pellets. The cattle feed machine available in the market are expensive and thus unaffordable for farmers. If small scale animal producers have access to a domestically developed pellet technology that is low cost , then it reduces the dependency on the high cost of commercial feeds available in the market and makes profitable by taking advantages of different feedstuff available at cheap prices, especially during harvest when high – quality ingredients available at low prices.

Keywords*:* pellets, livestock, white revolution.

I. INTRODUCTION

Different cattle feeding production systems have separate advantages and disadvantages. Most cattle in the US have a diet that is composed of at least some forage. In fact, most beef cattle are raised om posture from birth in the spring until autumn (7 to 9 months). Then for pasture- fed animals, grass is the forage that composes all or at least the great majority of their diet. Cattle fattened in feedlots are fed small amounts of hay supplemented with grain, soy and other ingredients in order to increase the energy density of the diet. The debate is whether cattle should be raised on a primarily composed of pasture or a concentrated diet of grain, soy, corn and other supplements. The issue is often complicated by the political interests and confusion between labels such as “free range”, “organic,” “natural”. Cattle raised ona primarily forage diet are termed grass- fed or posture-raised ; for example meat or milk may be called grass-fed beef or posture-raised dairy. However, the term “pasture-raised can lead to confusion with the term “free range”, which does not describe exactly what theanimals eat.

Types of Cattle Feeding:

1. Grazing:

Animals grazing in rangelands, pastures, and grasslands and with little or no integration of crops involved. About 60 % of the world’s pasture land is covered by grazing systems. According to Food and Agriculture Organization statistics, “Grazing systems supply about 9 percent of the world’s production of beef and about 30 percent of the world’s production of sheep and goat meat. For an estimated 100 million people in arid areas, and probably a similar number in other zones, grazing livestock is the only possible source of livehood.

2. Grass -Fed:

Grass and other forage compose most or the majority of a grassfed diet. There is debate as to whether cattle should be raised on diets primarily composed of pasture or a concentrated dirt of grain, soy, and other supplements. The issue is often complicated by the political interests and confusion between labels such as “free range”, “organic”, and “natural”. Cattle raised on a primarily forage diet are termed grass – fed or pastureraised ;meat or milk may be called grass- fed beef or pastureraised dairy. However, the term “pasture – raised” can lead to confusion with the term “free range” which does not describe exactly what the animals eat. Thus, cattle can be labelled free Research Article Volume 9 Issue No.3 International Journal of Engineering Science and Computing, March 20831 http://ijesc.org/range but not necessarily grass – fed. Another term is “grassfinished”, for which cattle are generally held to a higher standard in terms of tenderness and marbling. However, the label generally has no strict regulations. The Agricultural Marketing Service of the United States Department of Agriculture previously had a standard for “Grass – Fed” meat, but withdrew the standard in 2016.

3. Corn - Fed:

Cattle called “corn – fed”, “grain – fed”, or “corn – finished” are typically fattened on maize, soy, and other types of feed for several months before slaughter. As a high – starch, high – energy food, corn decreases the time to fatten cattle and increases

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carcass yield. Some corn – fed cattle are fattened in concentrated animal feeding operations known as feed lots. In the United States, most grass – fed cattle are raised for beef production. Dairy cattle may be supplemented with grain to increase the efficiency of production and reduce the area neededto support the energy requirements of the herd. A growing number of health and environmental proponents in the United States such as the Union Concerned Scientists advocate raising cattle on pasture and other forage. Complete adoption of farming practices like grass – fed beef production systems would increase the amount of forage land needed to raise cattle but reduce cropland used to feed them.

Biomass, as a source of energy is gaining importance with time. It is replacing coal in certain applications like small scale power plants, heating and many decrease the effective cost of cooking. Most importantly, this process of producing solid fuel from biomass waste can help in the waste management of these wastes in a productive way. This project deals with the design and fabrication of a simple and compact machine, which will convert the raw biomass waste in a storable form. Pellets formed are short cylindrical pieces which are produced mechanically by compressing a uniform material that has first passed through a mill to provide homogeneous particle size after which it is pressed through a mill to provide homogeneous particle size after which it is pressed through a die with holes of required size. The machine would be designed in such a way that there would be very little manual intervention required during the process. Also the design would be cost effective so as to market it domestically, focusing on the average farmer as a customer.

Literature Review – Gurpude R et al.[1] :

The automation has the opportunity of making a greater and even more significant impact on society. In the study of project we have discussed about the various mechanisms used for automating the mechanical system. For automating the mechanical system, the study of mechanisms is necessary. So, the project reveals the various mechanisms used for automating mechanical systems. Mechanisms usedfor automating mechanical systems. The automation in mechanical systems leads to increase in productivity. During study, 60 mechanisms were collected and studied which can be used for automating mechanical systems and categorized on the basis of conversionof motion from one form to another. This categorization of all mechanisms has been complied in the form of database which is nothing but a software, which will help for easy access mechanism according to user requirement for designing the automated mechanical systemusing combination of mechanism. In the industries, automation of the manufacturing operations holds the promise of increasing productivity of the labours.

Hannure A et al.[2] :
Plant nursery is important part of agriculture field and facing many problems. The problems are availability of labours, low productivityrate and more manual efforts required for seed feeding. In plant nursery more time is required for plantation which is due to seed feeding process. For reducing these problems of plant nursery research of automatic seed feeder mechanism is used. The mechanism consist of the hopper for seed feeding, a belt drive to move single seed towards the tray and intermittent advancement of the tray.

This all the mechanisms make the project cost efficient. So, this paper helps to minimize the human efforts involved in plantationand save the time. This will give perfect plantation with less effort.

Verheke H et al[3]:
In this paper vending machine provides a simple and efficient method for securing the pouches in place. All of the pouches are mountedon upstanding columns within the vending machine. A spring-loaded retainer is provided for each pouch, and the pouch is held in
place merely by pivoting the retainer against the action of a coiled tension spring. The pivoting of the clip brings the spring through it center point, and the spring will in turn have an over-the-center action in holding the clip against a supporting plate. The top of the pouchis mounted between the plate and the clip. The pouches are easily inserted, and there is no alignment problem as would be necessary when using the rod and hole support arrangement. Another problem overcome by the vending machine of this invention is that of dispensing the pouches once they have been loaded in the machine.

Browne J et al [4]:
A vertical vacuum corrugation feeder apparatus is disclosed that operates to feed single sheets of any kind from a stack under constantload independent of stack height, generates maximum restraining force on sheets two and above thus decreasing multifeeds, permits a dual shared feed head and reduces machine power requirements. The vacuum corrugation feeder mechanism has two acquisitions chambers surrounded by a plurality of belts that drive sheets from either tray depending on whether the belts are driven clockwise or counter clockwise.

Iftovits E et al [5]:
Accordingly, the instant invention provides a drive unit for a document feeding machine. The drive unit includes: a paper feeding module having a pair of Support railings; and a modular drive unit. The drive unit includes: a shaft journaled in a pair of side

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frames; a conveying belt mounted on the shaft for conveying documents from an upstream position to a downstream position, the upper reach of said belt defining a feed path; a cross bar extending between and removably secured to the pair of support railings; a drive unit Support plate secured to the cross bar; and a motor for driving the conveying belt secured to the support plate. When the cross bar is detached from the pair of support railing, the drive unit support plate, the motor and one end of the conveying belt drop below the feed path to facilitate repair of the modular drive unit.

II. METHODOLOGY

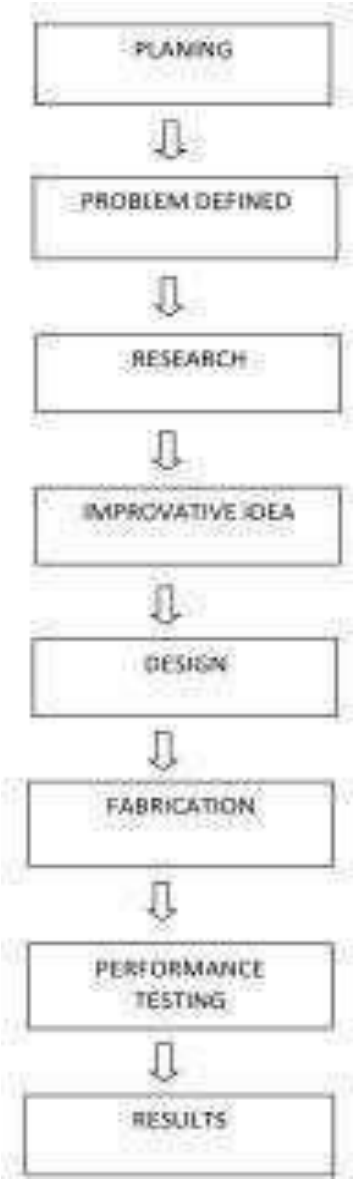
1. Actual survey through number of stores that uses pellet machines.
2. Designing of various parts required for the machine.
3. Preparation of 2D drawing as well as 3D model of various parts.

4.3D model is then manufacture by using various operations and processes in central workshop.

5. Assembly is completed and then Testing of machine will have to complete for various parameters. Then check for results.

Proposed layout:

STRUCTURE ANALYSIS



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III. PROPOSED WORK

Steers feed machine arranged exceptionally and made unshakable for better nature of mixing for best nature of possible result. Pelleting is done through a phenomenally arranged significant processing plant. Pellet plant is conveyed pellets from powder type normal substances. Pellet processing plant is sensible to make different size of pellets. Pellet plant contain following parts:

1. **Feed container** - This is where taken care of and expelled by the two pellet rolls to the bite the dust plate as pellets. It has external what's more, internal distances across of 280 mm and 220 mm, individually with level of 150mm. Treated Steel can be utilized for the feed container.

2. **Pelleting chambe**r - this is where blending of feeds performed before being moved through by the pellet rolls into the openings of thepass on plate. Gentle Steel (MS) material can be utilized for plate with aspects of 30 cm x 12 cm.

3. **Pellet rollers** - This part is mindful in compacting the planned feed before it was expelled in the kick the bucket plate. The two pelletrolls will be utilized, each roll with a component of 70 mm width x 60 mm length.

4. **Pass on plate** - the part changed over planned takes care of into round and hollow molded strong materials or into pellets. It tends to be produced using a metal plate with 220 mm measurement with 20 mm thickness. Each opening in bite the dust with a distance across of 5mm.

5. **Release chute** - this is where the pelletized takes care of were released for assortment. It very well may be produced using 2 mm thickMS plate with aspects of 13 cm wide x 45 cm long.

6. **Electric Motor:** Electric engine turning the primary shaft is utilized. This is capable in driving the pellet job sosuitable speed drove for the change into pellets. A solitary phase1 HP engine can be utilized.

IV. MODELING AND ANALYSIS

Fig no.1

Fig no.2

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Fig no.3

V. FACILITIES REQUIRED AND AVAILABLE

A. Access of research papers for project on internet.
B. Central workshop.
C. Software's like Autodesk, AutoCAD, CATIAV5R20 and ANSYS.

VI. CONCLUSION

A cows feed making machine is expected for the usage of neighborhood restricted scope farmers. This machine is more useful, money relatedand proficient. The machine can be made at little studios or machine shops.

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