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Design and Fabrication of Cattle Feed Mixing Machine

Vijayakumar. R¹, Tharanath. R², Kavipriya. R³, Himaya Sri. B⁴

^{1, 2, 3, 4}Mechanical Department, Prathyusha Engineering College

Abstract: With the coming of Journal Improvement Board there has been a generous development of dairy cattle ranches and poultry cultivates everywhere throughout the nation. The expansion of these improvement ventures depends to a great extent on the accessibility of dairy cattle feed. Shortage of astounding nourishing materials is one of the significant requirements in the journal business and the investigation was led to set up a conservable and practical dairy cattle feed square. Sustaining machine to domesticated animals is worthwhile to both the animals and the rancher, as it supplies the expected supplements to the animals and is likewise economical. However, animals nourishing gear are known to be costly and exorbitant especially to the nearby ranchers. This investigation is an endeavor towards structuring and creating a machine fit for blending feed constituents. The plan joins the utilization of nearby crude materials for the development. The machine will be planned and manufactured with a perspective on diminishing human exertion and time by investigating the different rule related with machine structure.

Keywords: cattle farms, poultry, livestock, nutrients, feed constituents, human effort, farmers

I. INTRODUCTION

Sustenance is a standout amongst the most critical fundamental needs of creatures like the pigs so as to endure. That is the reason nourishment and apparatus are connected as far as sustenance creation, planning and different procedures. Generally, little scale hoard, steers and poultry raiser like the scientist, utilized manual or hand to blend the squashed feed. Wandering into medium scale generation, hardware are required to mix and fixings to transform into nourishing of the animals. The procedure of assembling of dairy cattle feed is moderately basic and comprises of decrease of size and mixing of the different fixings. The chose fixings are gone through a disintegrator or pulveriser to lessen the measure of the particles to the required work estimate. The proposed model can be utilized for both dairy and poultry ranch. The feed squares delivered utilizing the horticultural waste could be kept for 5 days in open condition and could likewise be kept for 45 days under fixed polyethylene bundle with no quality crumbling.

II. COMPONENTS USED

The following components are used in this project,



A. Blade

Cutting edge making is the way toward assembling a sharp edge by any one or a mix of procedures:

- 1) Stock expulsion
- 2) Forging to shape
- 3) Welded overlay
- 4) Investment cast.

Run of the mill metals utilized originate from the carbon steel, apparatus, or hardened steel families. Crude sharp edges have been produced using bronze, copper, metal, iron, obsidian, and stone.



B. Motor

Single stage engines are the electrical gadgets with yield control around 1HP (Strength). These are for the most part single stage enlistment engines. It assumes an imperative job in local applications. A large portion of these household applications are fans, electric toys, blowers, radiating siphons, clothes washers, etc. When providing a solitary stage voltage to the stator of these machines, the stator will deliver transition. This motion pivots and cuts the rotor conductors. Because of this an EMF is actuated. As the rotor circuit is shut the present courses through the rotor conductor. This rotor current will cause rotor motion. These rotor transitions additionally pivot inverse way as the stator motion. The cooperation of these two transitions prompts a resultant torque which pivots the engine. In any case, the two motions (stator and rotor transitions) are equivalent in greatness however inverse in course. Because of this the resultant torque drops with one another. In this way, the engine won't pivot. It is the reason the single stage engines don't self-begin.

C. Belt

V belts (likewise style V-belts, vee belts, or, less ordinarily, wedge rope) tackled the slippage and arrangement issue. It is presently the essential belt for power transmission. They give the best mix of footing, speed of development, heap of the direction, and long administration life. They are commonly perpetual, and their general cross-area shape is generally trapezoidal (thus the name "V"). The "V" state of the belt tracks in a mating groove in the pulley (or sheave), with the outcome that the belt can't slip off. The belt likewise will in general wedge into the furrow as the heap expands—the more noteworthy the heap, the more prominent the wedging activity—improving torque transmission and making the V-belt a powerful arrangement, requiring less width and pressure than level belts. V-belts trump level belts with their little focus separations and high decrease proportions. The favored focus separate is bigger than the biggest pulley distance across, however under multiple times the aggregate of both pulleys. Ideal speed extend is 1,000– 7,000 ft/min (300– 2,130 m/min). V-belts need bigger pulleys for their thicker cross-area than level belts.

D. Pulley

A pulley is a wheel on a pivot or shaft that is intended to help development and alter of course of a rigid link or belt, or exchange of intensity between the pole and link or belt. On account of a pulley bolstered by a casing or shell that does not exchange capacity to a pole, however is utilized to control the link or apply a power, the supporting shell is known as a square, and the pulley might be known as a sheave. A pulley may have a furrow or scores between ribs around its perimeter to find the link or belt. The drive component of a pulley framework can be a rope, link, belt, or chain.

E. Bearing

Single column profound notch metal rollers are the most generally utilized roller bearing sort on the planet because of their flexibility and in general execution. They are described by having profound raceway grooves in which the inward and external rings have round circular segments of somewhat bigger span than that of the balls. They likewise have non-divisible rings. Their straight forward essential structure has numerous points of interest

- 1) Excellent for high speeds
- 2) Good outspread burden limit
- 3) Acceptable pivotal burden limit in the two bearings
- 4) Have low torque limit at startup and running paces
- 5) Can work with low commotion
- 6) Require little keep up

F. Shaft

A pole is a pivoting machine component, generally round in cross area, which is utilized to transmit control starting with one section then onto the next, or from a machine which produces capacity to a machine which retains control. The different individuals, for example, pulleys and gears are mounted on it.

Sorts OF SHAFT

They are primarily characterized into two kinds:

- 1) Transmission shafts are utilized to transmit control between the source and the machine engrossing force; for example counter shafts and line shafts.
- 2) Machine shafts are simply the fundamental piece of the machine; for example crankshaft.

G. Frame Rod

Bar stock, additionally (conversationally) known as clear, slug or billet, is a typical type of crude cleansed metal, utilized by industry to fabricate metal parts and items. Bar stock is accessible in an assortment of expulsion shapes and lengths. The most widely recognized shapes are round (roundabout cross-segment), rectangular, square and hexagonal or hex. A bar is described by an "encased invariant arched cross-segment", implying that funnels, edge stock and items with changing breadth are not viewed as bar stock. Bar stock is ordinarily handled by an arrangement of sawing, turning, processing, penetrating and pounding to create a last item, frequently endlessly not the same as the first stock. At times, the procedure is somewhat mechanized by particular gear which encourages the stock into the fitting preparing machine.

III. WORKING

The process of manufacture of cattle feed is relatively simple and consists of reduction of size and blending of the various ingredients. The selected ingredients are passed through a disintegrator or pulverize to reduce the size of the particles to the required mesh size. The proposed model can be used for both dairy and poultry farm. The feed blocks produced using the agricultural waste could be kept for 5 days in open environment and could also be kept for 45 days under sealed polyethylene package without any quality deterioration.



IV. COST ESTIMATION

Component details	Component cost(Rs)
Blade	4000
motor	4000
Belt	276
pulley	1000
bearing	80
shaft	350
Frame rod	1800

V. CONCLUSION

Cattle feed mixing machine is an effective alternating feeding method for dairy and poultry cattle during forage scarcity periods. It can be recommended as the best to be fed with a little amount of fresh forages having protein and energy balance during roughage scarcity at low cost. A livestock feed mixing machine has been developed for the use of the local small-scale farmer. The machine has a capacity which suits its purpose but can be improved and modified to reduce the power consumption. This machine can be fabricated affordably at small workshops in developing countries.

VI. RESULT

Based on the survey conducted on various medium and small scale cattle farmers we came to an statement that the money required for the purchase of feed mixing machine is very high and the space required is also quite negligible, to avoid this factor we have designed a new feed mixing machine which combines the work of large machine and occupies a very less space. This FEED MIXER is simple contains some mechanical components which cruhes the feed and converts it into powder form, and it is economical also.



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