



SUGARCANE LIFTING MACHINE

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ABSTRACT

The Indian sugar industry positions eleventh in size out of 200 sugar-creating nations; and constant progression is fundamental to guarantee that this industry stays aggressive. This project is about innovative idea used in sugarcane lifting process. Normally the sugarcane are loaded in the trucks manually and by heavy machines, in order to simplify that we have designed a pulley and belt drive arrangement with arms for lifting the sugarcane to top of the trucks. Another important factor is this lifter is designed to accommodate different heights of trucks.

Keywords: sugarcane, pulley and rope, adjustable heights, reduced effort.

1) Problem Statement

The sugar factories work in the season of October to march, during season lot of sugarcane is collected and stored in an open place. Loading of whole sugarcane to the trolley has become a very difficult task due to dust coming out of it and it creating a lot of health hazards to human beings. As it is injurious to health and too much time consuming, labours are unable to work in that environment, sometimes they avoid to do work. Hence a mechanical system must be developed for the loading of sugarcane.

Introduction Overview

Sugar from sugarcane is an item which impacts on numerous economies including India. The sugar business in India faces numerous difficulties, which should be tended to so as to stay aggressive. Benefit in the global sugar industry has been stressed by expanding farming information costs, with one of the principle factors being transport costs. This part represents around 20 – 25 % of the complete expense of sugarcane generation in India, which likens to Rs. 750 million for each annum. Sugarcane in Indian is for the most part developed in the provincial locales of Maharashtra and Uttar Pradesh which had a yearly creation increment from 500 000 tons in 1950 to 21 million tons in 2000. This demonstrates sugarcane generation has quickly expanded. The vehicles vary concerning their administration, plan and abilities. The Indian sugar industry is expansive and positions eleventh among the 200 sugar creating nations on the planet which are overseen by 6 organizations. The sugarcane exchange framework contains sugarcane being Moved and stacked, trans-stacked and off- stacked, which adds up to more than 25 % of the all-out creation cost of sugarcane, henceforth little upgrades can have critical financial advantages. One such way of simplifying the loading process is done through the height adjustable sugarcane lifter. This eliminates the large manpower and time required for loading the sugarcane in trucks. This project works under the principle of conveyor mechanism. This conveyor is powered by a prime mover which in turn moves the belt with fixed arm upon which the sugarcane is loaded.

2) Components Description

MS Pipe

Pulley

Belt Conveyor

Bearing

DC Motor

Battery

BELT CONVEYER

That bear on the moving parts. Most course encourage the ideal movement by limiting rubbing. Course are grouped extensively as per the kind of activity, the movements permitted, or to the bearings of the heaps (powers) connected to the parts. Revolving course hold pivoting parts, for example, shafts or axles inside mechanical frameworks, and exchange hub and outspread burdens from the wellspring of the heap to the structure supporting it. The least complex type of bearing, the plain bearing, comprises of a pole turning in a gap. Grease is regularly used to lessen grating. In the metal roller and roller bearing, to forestall sliding grating, moving components, for example, rollers or balls with a roundabout cross-area are situated between the races or diaries of the bearing get together. A wide assortment of bearing structures exists to enable the requests of the application to be accurately met for most extreme proficiency, dependability, toughness and execution. The expression "bearing" is gotten from the action word "to hold up under" a heading being a machine component that enables one section to shoulder (i.e., to help) another. The most straightforward course are bearing surfaces, cut or framed into a section, with changing degrees of command over the structure, size, unpleasantness and area of the surface. Different orientation are isolated gadgets introduced into a machine or machine part. The most complex direction for the most requesting applications are exact gadgets; their assembling requires the absolute most noteworthy guidelines of current innovation.

DC Motor

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion. Let's start by looking at a simple 2-pole DC electric motor (here red represents a magnet or winding with a "North" polarization, while green represents a magnet or winding with a "South" polarization).

3) 1.2.4 Bearing

1.2.3 Belt Conveyor

A course is a machine component that obliges relative movement to just the ideal movement, and lessens contact between moving parts. The plan of the bearing may, for instance, accommodate free direct

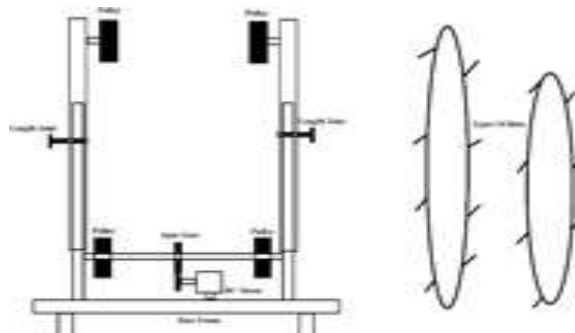
development of the moving part or with the expectation of complimentary revolution around a fixed pivot; or, it might keep a movement by controlling the vectors of ordinary powers

Every DC motor has six basic parts -- axle, rotor (armature), stator, commutator, field magnet(s), and brushes. In most common DC motors, the external magnetic field is produced by high-strength permanent magnets. The stator is the stationary part of the motor -- this includes the motor casing, as well as two or more permanent magnet pole pieces. The rotor (together with the axle and attached commutator) rotate with respect to the stator. The rotor consists of windings (generally on a core), the windings being electrically connected to the commutator. The above diagram shows a common motor layout -- with the rotor inside the stator (field) magnets. The geometry of the brushes, commutator contacts, and rotor windings are such that when power is applied, the polarities of the energized winding and the stator magnet(s) are misaligned, and the rotor will rotate until it is almost aligned with the stator's field magnets. As the rotor reaches alignment, the brushes move to the next commutator contacts, and energize the next winding. two-pole motor, the rotation reverses the direction of current through the rotor winding, leading to a "flip" of the rotor's magnetic field, driving it to continue rotating. So since most small DC motors are of a three-pole design, One pole is fully energized at a time (but two others are "partially" energized). As each brush transitions from one commutator contact to the next, one coil's field will rapidly collapse, as the next coil's field will rapidly charge up (this occurs within a few microsecond). There's presumably no better method to perceive how a normal DC engine is assembled, than by simply opening one up. Sadly, this is repetitive work, just as requiring the demolition of a flawlessly decent engine. The utilization of an iron center armature (as in the Mabuchi, above) is very normal, and has various preferences. For one thing, the iron center gives a solid, inflexible help for the windings - an especially critical thought for high-torque engines. The center likewise directs heat far from the rotor windings, enabling the engine to be driven more enthusiastically than might some way or another be the situation. Iron center development is likewise moderately modest contrasted and other development types.

4) 1.2.6 Battery

An electric battery is a gadget comprising of at least one electrochemical cells with outside associations gave to control electrical gadgets, for example, spotlights, cell phones, and electric vehicles. At the point when a battery is providing electric power, its positive terminal is the cathode and its negative terminal is the anode. The terminal checked negative is the wellspring of electrons that will move through an outer electric circuit to the positive terminal. At the point when a battery is associated with an outer electric burden, a redox response changes over high- vitality reactants to bring down vitality items, and the free- vitality distinction is conveyed to the outside circuit as electrical vitality. Generally the expression "battery" explicitly alluded to a gadget made out of numerous cells, anyway the use has advanced to incorporate gadgets made out of a solitary cell.

5) 2.2 Design 2D



2.4 Working

Here were fabricating the sugarcane lifting machine. Here the different diameter pipes are used to accommodate various height of trucks.

Here the collecting plate and chain drives are rotating continuously by the motor. The collecting plate is coupled between the two chain drives for collect the sugarcane materials from the bottom place. Here only a single person is enough to load the sugarcane in the equipment. Then the collected sugarcane is lifted to the top of the truck another person on the truck collect the sugarcane. Our project is having wheels for movable application.in addition to that this project can be adjusted to various height depends on the truck size. It is an advantages that it could handle trucks of different loading height.

CONCLUSION

Thinking about all the structure parameters, constant computations, wellbeing standards, cost productivity, material life time and work accessibility, it tends to be presumed that the Mechanism that is proposed is the most fitting for conduction and transportation of sugarcane. The sugar plant is limited by an impediment of using an excavator for 10 hrs. Every day; from now on the utilization of this component which can be created at an onetime venture can serve the plant when required, dispensing with the costs. The system is adaptable as far as movement because of the nearness of a driving instrument which makes it to gather the sugarcane covering the entire plant region over which it is spread. By changing the extent of the beds, the measure of sugarcane that can be gathered can likewise be expanded correspondingly. The complete number of connections present in the system is extensively less making the upkeep cost of the instrument lesser. By this, above recommended continuous application will be ideal to suit the organization prerequisites and keeps human works from risky condition

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