ADVANCE CHECK BASIN FORMER

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ABSTRACT: *As India is an agricultural country, the growth of the country depends on the agriculture (farming) and the agricultural growth depends on irrigation method being used. In rain fed farming, moisture conservation has importance. One of the most moisture conservation practice is to form check basin, so that rainfall or rainwater can be harvested in the field. The traditional method of forming check basin is too much costly and laborious. So the easier and faster method of forming check basin is needed. Thus our intension is to provide farmer a 'check basin former. In rain fed farming, moisture conservation has more importance. One of the most moisture conservation practices is to form check basin, so that rainfall or rainwater can be harvested in the field. The traditional or manual method of forming check basin is more time consuming and laborious work so the easier and faster method of forming check basin is needed.[2] Our project is intended to reduce the efforts and saves the time of farmer, so that he can work efficiently.*

One of the most moisture conservation practice is to form check basin, so that rainfall or rainwater can be harvested in the field. The traditional method of forming check basin is too much costly and laborious.Basin: setting out, forming the bunds and smoothing the land within the basins.

- **KEYWORDS- Cam & Follower, Sprocket, Bund Former, Etc.**

INTRODUCTION:

The check-basin method of irrigation is widely practiced in India, as it is well suited to all irrigable soils and to a variety of crop. Slopes up to two to three per cent can be irrigated by using this method with a good control on irrigation water and high water-application efficiency. In this method, the whole field is divided into basins according to the capacity of water. Basins are connected through a 'Dhora' (A small drain type flow way), which has raised earthen walls on both sides. 'Dhora' is of two types, one is the main 'Dhora' and the other 'Dhora' is connected to basins. Size of basins are made according to the inflow of water.[2] The basins are surrounded by small furrows. Branch 'Dhora' flows towards the slope from the main 'Dhora'. If the slope of branch 'Dhora' is steep, 'moonja' or polythene is spread in it to prevent erosion of sides. The main source of water is located at the highest place in the field. The width of drains is affected by factors like flow of water, percentage, slope and structure of the ground etc. The length of 'Dhora' is different depending on the basis of slope and formation of the fields. This method is also prevalent in India as it does not cause any burden on the farmer.

PURPOSE:

- The purpose is to form check basins in field with less consumption of power. The machine to work with reduce forming wages, efforts and time.

- Many farmers requires check basins for the farming. As the traditional method of forming a check basin is costly, laborious and time consuming. Also the existing machines are costly, bulky and complicated. Hence farmers are facing problems of forming check basins. Understanding the farmer's problems, we have designed and developed a check basin former machine.[4]

SOLUTION:

consists of application of scientific, principles, technical information Design and nation for development of new or improvised machine or mechanism to a specific with maximum economy and efficiency. Here creed mooch has to be adopted. The total design work has been split up into two parts: system design mainly condemns the various physical constraints and is space requirement arrangement of various components on main frame system. mm machine interaction, number of position of working environment of machine, chances of failure, safety provided, measures to be sinking aids, ease of maintained, scope of improvement, wish of machine from pound level, total weight of machine and a lot more. In a mechanical design the components are listed down and stored on the basis of their procurement, design into two categories namely,

1. Design of parts
2. Parts to be purchased

For design parts detached design is done and distinctions thus obtain are to next highest dimension which are readily available in market. This amplifies the assembly as postproduction servicing work. The various

tolerances on the works are specified. The charts are moored and passed on to the process various catalogues and specified that anybody can purchase the same from the so shop with given specifications.

DESCRIPTION:

1. DESIGN OVERVIEW:

3.1 System Design

In system design we are mainly concentrated on the following parameters.

- System selection Based Physical Constraints

While it must be checked whether it is going to be use large scale industry or small scale industry in our case it is to be use by a small large scale industry or small scale industry. It is to be very compact so that it spaces major system be mechanical design has direct norms with the adjusted to comer a room. The design hence the

foremasts job is to control the 14 physical parameters. That the distinctions obtained anger mechanical design can be well title into that.

- Arrangements of various components

Keeping into view the space restrictions the 14 composes should be laid such that their easy removals are servicing is possible. More over should be component easily none should be hide. Every possible space is utilized in components arrangements.

- Components of system

As already stated the system should be compact enough so that it can be accommodated at comer of a room. All the moving should be well close and compact. A compact system design gives a high weighed tenure which is desired. The friendliness of the machine with the operator that is important criteria of it is the application of anatomical and psychological principles to solve ems arising from man machine relationship. Following are some of the topic included in this section.

- Chances of failure

The losses incurred by owner in case of failure are imp portent criteria of any design. Factor of safety while doing mechanical design is Kent high so that there are less chances of failure. Moreover, periods maintain is required to keep unit healthy.

- Servicing facility

The layout of components should be such that easy servicing is possible. Especially those components which require frequents servicing can be easily disassembled. Scope of future improvements arrangement should be provided to and the scope of work in future.

- Height or machine from ground

For ease and comfort of operator the height of machine should be properly so that he may not get tired during operation. The machine should be slightly 16 than the waist level, also enough clearance should be provided from the ground for to mount on table.

- Weight of machine

The total weight depends upon the selection of material well as components as he dimensions of components. A higher weighted machine is difficult in transportation in case of major break down: it is difficult it to workshop because of more weight.

- Mechanical Design

Mechanical design phase is very important from of the view dancer as web success of the project depends upon the correct design analysis of the problem. May preliminary calmatives be sensed during this place deport should have adequate and wear analysis. He should identify the extremely and annul force acting on the machine parts.[5]

This stress may be classified as:

1. Tensile stress due to axial load W of soil
2. Compressive stress
3. Bearing stress
4. Crushing stress
5. Shearing stress

Designer should estimate these forces very accurately by using design equation. If he does not have sufficient information to estimate them he should make certain assumption based on similar condition. This will almost satisfy the functional needs. Assumptions must always be on the safer side.[6]

Selection of factors of safety to find working or design stress is another important stress in design of working dimensions of machine elements. The corrections in the value to be made according in the 14 kinds of loads, shape of theoretical stress are nets and service requirements. Selection of material should be made according to the condition of loading shape of product environment conditions and desirable properties of material. Provision should be made to minimize nearly adopting proper lubrication

methods. In mechanical design the components are listed down and stored on the basis of their procurement in two categories.[7]

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2. WORKING:

The check basin former machine assembled in following manner:

- Take the frame and mount the flipper with shaft on it at backside through pedestal bearing and fastened using nut & bolts.
- Now take the wheels and mount them at the front bottom side using pedestal bearings through shaft. On the same shaft nearer to right wheel mount Big sprocket of 46 teeth.
- Just above that mount bigger sprocket using pedestal bearings of a same size through shaft and connect both the sprockets with chain.
- Take a radial cam and mount it on same shaft that bigger sprocket is mounted.
- Weld flat face follower to the frame member at the middle and stopper is linked to it.
- Take the Bund former and fastened it using nuts & bolts at the front bottom side.
- Thus, the assembly of check basin former machine is ready.
- Cam & Follower

A Cam is a mechanical device which transmits the motion to the other element called follower. The shape of the cam depends upon own motion, the required motion of the follower and the shape of contact face of the follower. In general the motion of the follower is only determined positively by the cam during a part of each stroke whilst during the remainder of the stroke contact between the cam & follower has to be maintained by an external force, often supplied by spring in this connection it should be noticed that the cam does not, as would at first appear likely, determine the motion of the follower during the first part of the out stroke and the latter part of the return that the motion of the follower is positively controlled by the cam.

The cam that used in the machine is of type Plate or radial cam. In these the working surface of cam is shaped that the reciprocation or oscillation of the follower is in a plane at the right angles to the axis of the cam.

The followers are of many types but the follower used in the machine is of type flat face in this. These have the advantage that the only side thrust is that due to friction between the contact surfaces of cam and follower. The relative motion is one of sliding but it may be possible to reduce this by off setting the axis of the follower as shown in the diagram. This results in the follower revolving under the influence of the cam.

A radial cam & flat face follower is as shown in fig. below

- Flipper

Flipper is a component which revolves or flips and consists of 4 plates joined through shaft to frame using pedestal bearings.

Working of flipper

When the specific distance completes by the rotation of wheels are mounted at front side, the flipper flips and forms cross bunds. The revolution of flipper is allowed by the stopper.

- Sprocket

A sprocket or sprocket-wheel is a profiled wheel with teeth, or cogs, that mesh with a chain, track or other perforated or indented material.

Sprockets are used in bicycles, motorcycles, cars, tracked vehicles, and other machinery either to transmit rotary motion between two shafts where gears are unsuitable or to impart linear motion to a track, tape etc. Perhaps the most common form of sprocket may be found in the bicycle, in which the pedal shaft carries a large sprocket-wheel, which drives a chain, which, in turn, drives a small sprocket on the axle of the rear wheel

- Bund Former

A Bund former is implement by which the bunds or earthen walls are formed while forming check basin.

It is manufactured using sheets and angles. For the manufacturing two plates are joined together forming a angle as shown in the picture below.

PROJECT DIAGRAM:

ADVANTAGES:

- It completely eliminates the efforts of the farmers.
- It reduces the wages and less time required for the field preparation of basin.
- Perfect basin length can form easily as a special mechanism is used.

- The length of check basin can be easily adjusted using or replacing the bigger sprocket with suitable one.
- As this is tractor operated, Farmers may free from body pains like back pain, shoulder pain.

APPLICATIONS:

- Basin irrigation is suitable for many field crops. Paddy rice grows best when its roots are submerged in water and so basin irrigation is the best method to use for this crop.
- Other crops which are suited to basin irrigation include:
- Pastures, e.g. Alfalfa, clover;
- Trees, e.g. Citrus, banana;
- Crops which are broadcast, such as onion, vegetables, special type of grass, garlic, cereals.
- To some extent row crops such as tobacco.

FUTURE SCOPE:

In order to specify or vary the length of check basin, gear set concept of gear bicycle can be implement.

By slightly lengthen the frame at front, harrow can be attached, so it will breaking up and smoothing out the surface of the soil without affecting tractor efficiency.

A provision of space between the two basins can be made.

It can be made for large capacity tractors too.

CONCLUSION:

The check basin former machine is designed and developed by using cam & follower mechanism. It consists of mainly flipper Bund former, chain – sprocket, cam & follower and stopper. With this machine farmers can form check basins of required length in is farm. The machine is suitable and economical over small as well as large field area. It is very simple in construction and can be easily attached to tractor easily. It eliminates the efforts of farmers. It also saves time required..

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