MODIFIED BICYCLE LAWN MOWER

A PROJECT REPORT

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BONAFIDE CERTIFICATE

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TABLE OF CONTENTS

LIST OF FIGURES

List of Tables

ABSTRACT

The design objective is to come up with an apparatus for cutting grass that is portable, durable, easy to operate and maintain. It also aims to design a pedal powered Mower cycle. The pushing force required for moving the reel mower is obtained from the motion of a bicycle.

The Mower cycle consists of three main wheels with two of the wheels at the front. Between the two front wheels a cutting mechanism is made with internal spur gear system which transfers the torque to the mower spiral mechanism. The cutting mechanism is made of a flat blade rigidly fixed to the frame behind the spiral arrangement which is configured to contact at least one reel bar of the spiral blades during the rotation of spiral mechanism

CHAPTER 1

INTRODUCTION

1.1 LAWN MOWER

Lawn mower is an essential tool for the maintenance of yards. They vary in size, mode of operation and power. The power source riding mowers for example are usually powered by a gasoline engine and are ridden and steered by the operator but they are costly. So, our design objective is to come up with a Lawn mower cycle that is durable, cost efficient & easy to operate. The Lawn mower cycle is peddled powered. The power required to push the mover is obtained from a chain-driven cycle. This project attempts to combine a cycle and a mower.

There are primarily two types of mowers namely (i) the reel mowers, and (ii) the rotary mowers. The reel (cylindrical) mowers seem to be better. Made of blades on a revolving cylinder, they achieve clean cut by scissors action. As the mower moves forward, the rotating blades come in contact with a stationary bar called the bed knife and placed parallel to the ground. Grass is held by the shearing action of the reel blades against the bed knife. The mower is adjusted to various cutting heights. Rotary mowers are often powered either by an internal combustion engine or an electric motor and are generally moved manually, with the engine only spinning the cutting blades.

1.1.1 RELEVANCE

The main aim of our project is to come up with a cost-efficient lawn mower. A lawn mower is a machine used for cutting grass or lawns. A lawn is any area of grass; mostly tough grass which is neatly cut like in a private garden or a public park. Walk behind mowers are designed to be pushed by the operator and typically run on gasoline or electricity. Modern gas powered and electric powered lawn mowers cut grass with a single blade revolving at a high-speed parallel to the ground. Generally, in areas like ours, the conventional methods of grass cutting involved the use of cutlasses which never met the maximum satisfaction. More so, it is strenuous, time and labour intensive. Therefore, there is the need to develop a low-cost mower which can take care of this op fabricated peddle powered spiral blade lawn mower affordable by common man

1.1.2 HISTORY

The first lawn mower was invented in 1830 by Edwin Beard Budding. He was said to obtain the idea after watching a machine in a local cloth mill which used a cutting cylinder mounted on a bench to trim clothes for a smooth finish after weaving. Budding realized that a similar concept could be used to cut grass if the mechanism is mounted in a wheel frame to enable the blades rotate close to the lawns surface. These early machines were made of cast iron and featured a large rear roller with a cutting cylinder (reel) in the front. Cast iron gear wheel transmitted power from the rear roller to the cutting cylinder.

In 1832, Ransoms of Ipswich (under license) began the making of Budding ‘s mower. This company is today the world ‘s largest manufacturer of lawn care equipment. By mid-1850, Thomas Green developed a mower which used chains to transmit power from the rear roller to the cutting cylinder. It was called _”Silins Messer” meaning silent cutter. The machines were found comparatively lighter and quieter than the gear driven machines that preceded them. By late 1890, [i]motorized mowers appeared as light weight petrol engines and small steam power units became available.

In US, Colonel Edwin George produced the first gasoline powered mower in 1919. Electric powered mowers and rotary cutting machines emerged in the 1920‘s and 1930‘s. By 1960 the introduction of plastic components greatly reduced cost. Today, new technology has brought new improved versions. Low emission gasoline engines with catalytic converters are introduced to help reduce air pollution. Improved muffling devices are also incorporated to reduce noise. Today, the recent innovation is the rotary hover mower.

1.1.3 PROJECT PLAN

The design objective is to come up with a mower cycle that is durable, cost efficient & easy to operate. The mini project mainly consists of 7 Chapters. The first chapter is introduction part where we explain the basic concepts. The second chapter is literature review. This chapter explains the components and features of lawn mower cycle. The third chapter is design part where we explain how we made the required machine.

CHAPTER 2

LITERATURE REVIEW

2.1 THE BASICS IN GRASS CUTTING

Grass as most other plants grow during a certain period of the year. This can off course differ some depending on where in the world you are. For India, the grass starts to grow in April. From then to June the grass has its high season, which means it's growing fast and strong. During this period, you can cut the grass 1-2 times a week. What you should think of is to take it easy in the beginning of the growth period as not to stress the grass. The grass is then entering a period of low growing rate, mostly due to the sun, drying the sun, drying the soil.

You should take care not to cut the grass to short if the grass looks dry (turning somewhat yellow). A good rule is to cut about one third of the grass length at a time. The grass can be very sensitive and can be damaged if you cut too much at one time. Then we come to the length. Here it really depends on what kind of a lawn you 're aiming for. If you want a lawn that you can walk on you should leave at least 4cm of the grass. There are different approaches to cutting the grass all with advantages and disadvantages.

TYPES OF LAWN MOWERS

2.1.1 Reel mowers

The reel (cylindrical) mower is made of blades on a revolving cylinder, they achieve clean cut by scissors action. As the mower moves forward, the rotating blades come in contact with a stationary bar called the bed knife and placed parallel to the ground. Grass is held by the shearing action of the reel blades against the bed knife. The mower is adjusted to various cutting heights. Of all the mowers, a properly adjusted reel mower makes the cleanest cut of the grass, and this allows the grass to heal more quickly. The cut of a well-adjusted cylinder mower is straight and definite, as if cut with a pair of scissors. This clean cut promotes healthier, thicker and more resilient lawn growth that is more resistant to disease, weeds and parasites. Lawn cut with a cylinder mower is less likely to result in yellow, white or brown discolouration as a result of leaf shredding. While the cutting action is often likened to that of scissors, it is not necessary for the blades of the spinning cylinder to contact the horizontal cutting bar. If the gap between the blades is less than the thickness of the grass, a clean cut can still be made. If more however, the grass will slip through.

There are many variants of the cylinder (reel) mower. Push mowers (illustrated) have no engine and are usually used on smaller lawn areas where access is a problem, where noise pollution is undesirable and where air pollution is unwanted. As the mower is pushed along, the wheels drive gears which rapidly spin the reel.

Typical cutting widths are 10 to 16 inches (410 mm). Advances in materials and engineering have resulted in these mowers being very light and easy to operate and manoeuvre compared with their predecessors while still giving all the cutting advantages of large professional cylinder mowers. Their distinct environmental benefits, both in noise and air pollution, are also strong selling points, something not lost on many international zoos, animal sanctuaries and exclusive hotel groups. The basic push mower mechanism is also used in gangs towed behind a tractor. The individual mowers are arranged in a "v" behind the tractor with each mower's track slightly overlapping that of the mower in front of it. Gang mowers are used over large areas of turf such as sports fields or parks.

Typically, the cutting reels are ahead of the vehicle's main wheels, so that the grass can be cut before the wheels push the grass over onto the ground. The reels are often hydraulically powered

The main parts of a cylinder or reel mower are:

1. **Blade reel/cylinder** — consist of numerous (3 to 7) spiral blades that are attached to a rotating shaft. The blades rotate, creating a scissor-like cutting motion

2. **Bed knife** — is the stationary cutting mechanism of a cylinder/reel mower. This is a fixed horizontal blade that is mounted to the frame of the mower

3. **Body frame** — the main structural frame of the mower onto which the other parts of the mower are mounted

4. **Wheels** — these helps propel the mower in action. Generally, reel mowers have two wheels.

5. **Push handle** — the "power source" of a manually operated reel mower. This is a sturdy T-shape handle that is connected to the frame, wheels and blade chamber.

6. **Motor** — the power source of a reel mower that is powered by gasoline or electric.

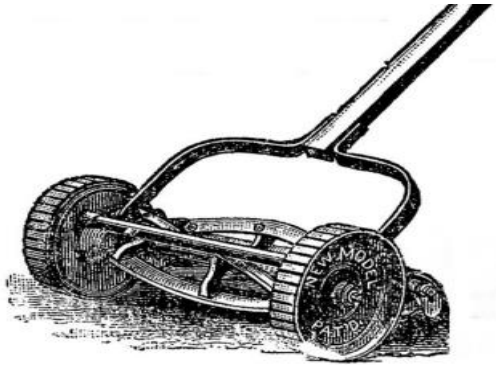

Figure 2.2 push lawn reel mower

2.1.2 Rotary mowers

A rotary mower rotates about a vertical axis with the blade spinning at high-speed relying on impact to cut the grass. This tends to result in a rougher cut and bruises and shreds the grass leaf resulting in discolouration of the leaf ends as the shredded portion dies. This is particularly prevalent if the blades become clogged or blunt. Most rotary mowers need to be set a little higher than cylinder equivalents to avoid scalping and gouging of slightly uneven lawns, although some modern rotaries are fitted with a rear roller to provide a more formal striped cut. These machines will also tend to cut lower than a standard four-wheeled rotary. The main parts of a rotary mower are:

1. Cutter deck housing — this houses the blade and the drive system of the mower. It is shaped to effectively eject the grass clippings from the mower

2. Blade mounting and drive system — the blade of a rotary mower is usually mounted directly to the crankshaft of its engine, but it can be propelled by a hydraulic motor.

3. Mower blade — a rotary mower generally has one blade that rotates horizontally. The blade features edges that slightly curved up to generate a continuous air flow as the blade rotates, thus creating a sucking and tearing action.

4. Engine — may be powered by gasoline or electricity.

5. Wheels — rotary mowers generally feature a set of four wheels; two front wheels and two rear wheels.

2.1.3 Gasoline mower

Most rotary push mowers are powered by internal combustion engines. Such engines are usually four-stroke engines, used for their greater torque. (Although a number of older models used two-stroke engines), running on gasoline (petrol) or other liquid fuels. Internal combustion engines used with lawn mowers normally have only one cylinder. Power generally ranges from two to seven horsepower (1.5 to 6.75 kW). The engines usually have a carburettor and require a manual pull crank to start them, although an electric starter is offered on some models. Some mowers have a throttle control on the handlebar with which the operator can adjust the engine speed. Other mowers have a fixed, pre-set engine speed

Gasoline mowers have the advantages over electric mowers of greater power and distance range. They do create pollution due to the combustion in the engine, and their engines require periodic maintenance such as cleaning or replacement of the spark plug and air filter, and changing the engine oil

2.1.4 Electric mower

Electric mowers are further subdivided into corded and cordless electric models. Both are relatively quiet, typically producing less than 75 decibels, while a gasoline lawn mower can be as loud as 95 decibels or more

Corded electric mowers are limited in range by their trailing power cord, which may limit their use with lawns extending outward more than 100–150 feet (30–45 m) from the nearest available power outlet. There is the additional hazard with these machines of accidentally mowing over the power cable, which stops the mower and may put users at risk of receiving a

Figure 2.3 cordless electric mower

2.1.5 Hover mower

Hover mowers are powered rotary push lawn mowers that use an impeller above the spinning blades to drive air downward, thereby creating an air cushion that lifts the mower above the ground. The operator can then easily move the mower as it floats over the grass. Hover mowers are necessarily light in order to achieve the air cushion and typically have plastic bodies with an electric motor. The most significant disadvantage, however, is the cumbersome usability in rough terrain or on the edges of lawns, as the lifting air-cushion is destroyed by wide gaps between the chassis and the ground. Hover mowers are built to operate on steep slopes, waterfronts, and high-weeded areas, so they are often used by golf course greens keepers and commercial landscapers

Figure 2.4 hover mower

2.1.6 Robotic mower

A robotic mower is contained by a border wire around the lawn that defines the area to be mowed. The robot uses this wire to locate the boundary of the area to be trimmed and in some cases to locate a recharging dock. Robotic mowers are capable of maintaining up to 5 acres (20,000 m 2) of grass. Robotic lawn mowers are increasingly sophisticated, are usually self-docking and contain rain sensors, nearly eliminating human interaction for mowing grass. Multiple robotic mowers can be used to mow an even larger area

Figure 2.5 Robotic Mower

2.1.7 Tractor pulled mower

These are usually in the form of an attachment to a tractor. The attachments can simply function by the movement of the tractor similar to manual push cylinder mowers, but also sometimes may have powered moving blades. They are commonly mounted on either the side or the back of the tractor.

Figure 2.6 tractor-pulled mower

2.1.8 Zero-turn riding lawn mower

A zero-turn riding lawn mower (colloquially, a z-turn) is a standard riding lawn mower with a turning radius that is effectively zero. Different brands and models achieve this in different ways, but hydraulic speed control of each drive wheel is the most common method. Both commercial duty and homeowner models exist, with varying engine power options, size of cutting decks, fuel type (gasoline or diesel), and prices. A z-turn mower typically drives faster and costs more than a similarly sized conventional riding mower that has steerable front wheels.

Figure 2.7 turn riding lawn mower

2.2 REEL MOWER PARTS

There are three main structural members in a reel cutting unit:

1. The REEL consists of varying numbers of helix shaped blades attached to support spiders which are mounted on a rotating shaft.

2. The BEDKNIFE is attached to the bed bar and the assembly is mounted to the main frame in a manner that allows for paralleling and adjustment to the reel.

3. The FRAME supports the rollers, the bed bar assembly and reel with its drive mechanism, which can be hydraulic, belt driven or ground driven. A reel mower cuts grass with a scissors-like shearing action as the moving helix shaped blades pass over the stationary bed knife.

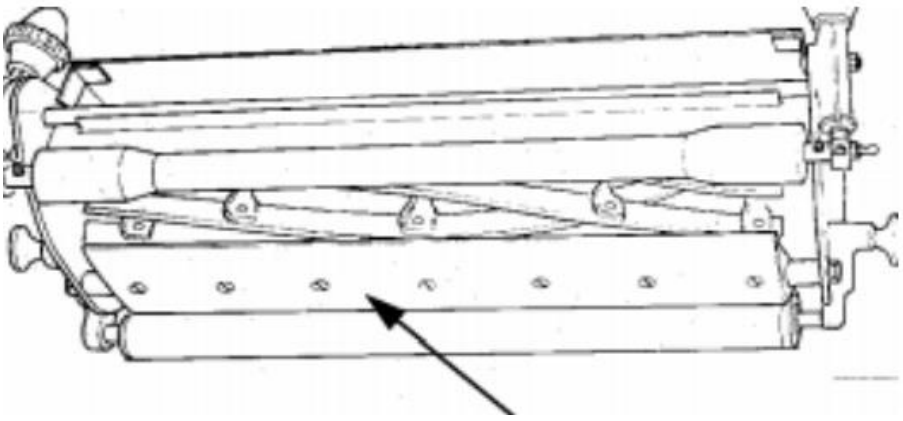

Figure 2.8 bed knife

2.2.1 Reel Mower Clip

To understand reel cutting theory, you must understand the concept of clip and the shear point. A shear point is any single point of contact made between the reel blade and bed knife. Clip is the forward distance travelled between successive blade contacts at one shear point

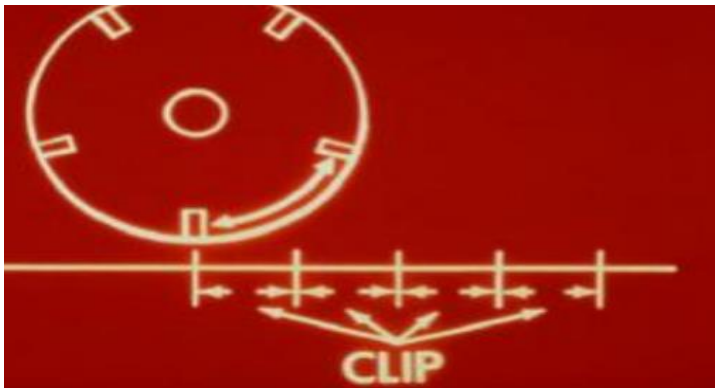

Figure 2.9 clip and shear point

2.3 FACTORS AFFECTING CLIP

1. The diameter of the reel
2. The number of reel blades
3. The speed of the reel
4. The ground speed

By following the blade path through two ―clips‖ as the machine moves forward, we can illustrate the actual process of cutting grass. The bed knife pushes grass toward the shear point while the reel blade gathers it in front. Each blade path has one half clip in which to cut all the grass.

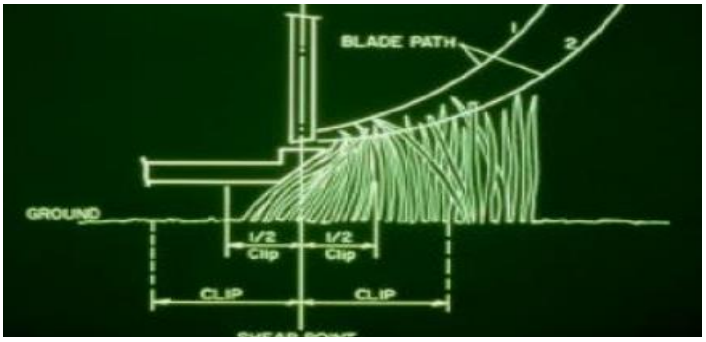

Fig 2.10 illustration of actual cutting process

Cutting path: Another term known as ―the cutting path‖ is the result of the helix angle and the

forward motion of the cutting unit. The shear point moves down the bed knife as the bed knife

moves forward. The grass is physically cut at an angle to the bed knife.

Other factors which affect reel mowing are the grass density and the grass acclimation or grain. Grass tends to thicken at the normal maintained height of cut. The denser the grass, the easier it is for the bed knife and reel to gather it. Grass density and grain caftan Override other factors we have discussed regarding the cutting action.

The basic requirements for good performance of reel mowers are:

1.The cutting edges on the reel blades and bed knife must be straight and sharp.

2.The bed knife must be exactly parallel with the reel.

3.The bed knife should be positioned against the reel with light contact

2.4 SET-UP AND ADJUSTMENTS

Reel mower performance depends on proper set–up and adjustment procedures. An error of .010 inch or .25 mm, in height end–to–end, or from one cutting unit to another, is visible as a mismatch on many golf course greens. Although there are design variations in cutting units, most require the same basic procedures. A surface plate, accurate height of cut tools and proper instruction are essential for setting up a cutting unit. There are many factors that can affect quality of cut, including condition of the mowing Equipment and agronomic factors. Turf conditions such as excessive thatch, ―sponginess‖ or attempting to cut off too much grass height may not always be overcome by adjusting the Machine. It is important to remember that the lower the height of cut, the more critical these Factors are. Remember that the ―effective‖ or actual height of cut depends on cutting unit weight, Cutting unit accessories and turf conditions. Effective height of cut will be different than the Bench set height of cut. Effective height of cut is the actual height the grass has been cut. Making an accurate Height measurement on the turf is difficult due to many variables. A true base is simply not Present. If the surface is uneven, spongy or varies in density, colour variations in the turf may Appear in the form of a streak. This is due to the effective height of cut being too low for the Existing turf conditions. To correct

problems, start or change a cultural practice, change Cutting unit configuration or raise the bench set height of cut. The lower your height of cut, the more predictable and smooth the turf surface must be. To accurately maintain height of cut and performance, routinely check the following

Components:

1.Reel Bearings

2.Bedknife to Reel Adjustment

3.Attitude Adjustment

4.Roller Parallelism

5. Height of Cut

2.4.1 Reel to Bed knife adjustment

Single point adjusts cutting units also have an adjustment mechanism on one end of the bed knife for adjusting the bed knife parallel to the reel. This bed knife levelling mechanism could may be an eccentric pivot bolt on one end of the bed bar, or a cap screw / jam nut assembly. Adjust the bed knife against the reel to evenly pinch one paper thickness across the entire width of the bed knife, then cut paper strips to check blade sharpness. Put the cutting unit on the turf and check for light bed knife to reel contact and free reel rotation. Do a final adjustment of bed knife to reel contact if necessary. Properly adjusting the bed knife to the reel is one of the most effective preventive maintenance practices for reel mowers. The amount of contact and how frequently it is checked are major factors in performance. A light contact adjustment, if maintained, will help keep cutting edges sharp on the reel and bed knife. This requires that the adjustment be checked frequently at a predetermined time interval. Dulled cutting edges cannot be corrected immediately by adjustment or over–tightening. Do not wait until the quality of cut has deteriorated to check the bed knife to reel adjustment. If the cutting edges on the reel blades and bed knife are not straight and sharp the mowing results may not be acceptable. This is true even if all other set–up procedures are correct.

2.5 SHARPENING

Cutting units should be kept as sharp as possible to:

1. Promote growth of healthy grass.

2. Optimize cutting unit performance.

3. Extend the life of the mower.

4. Maximize operator mowing time.

5. Allow the tractor to run most efficiently.

6. Provide excellent finished appearance of the turf.

Reel blades, and the edge of the bed knife should be checked for damage visually & by carefully feeling the edges. Of course, this should only be done when it is certain that the reel cannot be started, and never slide your fingers down the edges lengthwise. Rounded edges on the reel blades and bed knife will cause the grass blades to be pinched and torn, rather than sheared off cleanly. When light contact is not maintained, dull edges will soon result. Sharpening will also be required if the reel is ―cone shaped‖ (tapered). All reels eventually become tapered with use. If the reel is not adjusted or ground to a cylinder shape again, a mismatch in the height cut between adjacent reels can result.

There are several methods that may be used to sharpen a cutting unit. The one that you choose will depend upon the condition of the cutting unit. It should also make the most sense for the anticipated use. For example, if you are about to mow greens that have been core aerated or top-dressed, you may not want to grind the reels and install new bed knives. As the reel blades run against the bed knife a slight burr will appear at the front cutting-edge surface the full length of the bed knife. Occasionally run a file or facing grinder across the front edge to remove this burr to extend the cutting performance of the machines, Lapping must be done after single blade grinding. This is done to establish a ―land area‖ and to insure a perfect match between the bed knife and the reel edge. Lapping is not intended to be a reconditioning process to correct severely nicked or rounded blades, rifling or taper.

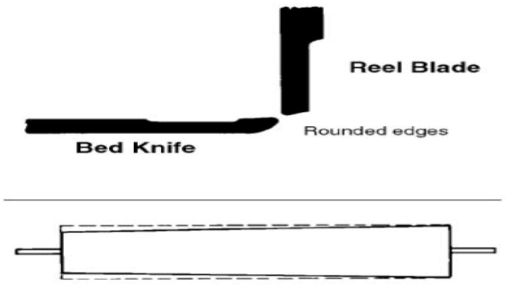

Fig 2.11 sharpening of blades

CHAPTER – 3

CONSTRUCTION DETAILS

3.1 SELECTING REQUIRED CYCLE FRAME

Different products come in different styles. One product category where this is a fact is The bicycle category. Getting the right impression of the product as well as considering the Way it is being used is important, both when it comes to emotional aspects but also Ergonomics and user interaction. The speed of a lawnmower is not that high so the aggressive style presented below is a Bit too much even if it is effective considering the amount of energy that you can provide From that position. If we see to the demanded speed and wanted input power the formal style Is the one best suited for our project. An honest expression with good ergonomically & Mechanical possibilities is the position we chose to work with. Hence after necessary research A bicycle frame which gives a formal body position was chosen.

MOWER FRAME

The frame is the main structural unit of the mower onto which the other parts of the Mower are mounted. The frame is that provides a base unit that all of the components /subsystems are mounted on. The frame supports the Trolley wheels, the bedbarassembly and the reel with its drive mechanism. The Mower Frame is made of cast iron.

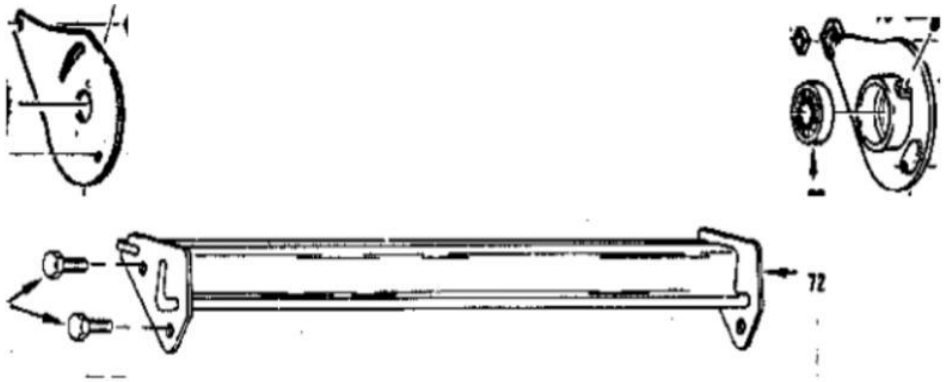

Fig 3.2 Mower Frame

3.3 REEL

The Reel consists of varying numbers of helix shaped blades attached to support Spiders which are mounted on a rotating shaft. The reel is made up of

six smaller blades of sizes 310mm x 25mm x 2mm and is made of steel materials. The blades are mounted on the three spiders rigidly fixed to the shaft and are oriented at a helical angle of 12 degree to the horizontal on the circular spiders for Efficient grass cutting.

Fig 3.4 Helix spiral blade

3.5BED KNIFE

The Bed knife is attached to the bed bar and the assembly is mounted to the main frame in a manner that allows for paralleling and adjustment to the reel. The bed knife takes up almost the entire distance between the wheels on each end, and determines the cutting width of the mower. As the movable blades on the reel pass by the bed Knife, the grass trapped between the blades and the bed knife is sheared off. The slight space Between the bed knife and the reel is adjusted by a precision screw mechanism. The bed knife is also made of steel material of size 300mm x 55mm x 2.6mm. Its edge Is grinded with a front relief angle of 30 degree to make grass cutting easy in a scissor action with the reel. The bed-knife is fixed to the machine frame behind the reel.

Fig 3.6 Bed knife

3.7 MAIN WHEEL WITH EXTERNAL GEARS

The pinion gear transfers the power from the rotation of the main wheel to the axle and Spinning blades.

Fig 3.8 Main wheel With External Gears

CHAPTER – 4

WORKING PRINCILE OF LAWN MOWER CYCLE

The cutting mechanism is made of a flat blade rigidly fixed to the frame behind the Spiral arrangement which is configured to contact at least one reel bar of the spiral blades During the rotation of the spiral mechanism. To understand reel cutting theory, we must understand the concept of clip and the shear Point. A shear point is any single point of contact made between the reel blade and bed knife. Clip is the forward distance travelled between successive blade contacts at one shear point. The bed knife pushes grass toward the shear point while the reel blade gathers it in Front. Each blade path has one-half clip in which to cut all the grass. The pushing force Required to move the reel mower is given by the motion of bicycle.

CHAPTER 5

DESIGN CALCULATION

5.1 Spur Gear and Pinion Parameters

The gear train of a reel mower consists of a driving internal spur gears fixed to each of the front wheels internally which transmits the torque from the wheels to the reel, through the Pinions on the shaft.

Using the Gear ratio/ speed ratio relation

W1/w2 = T1/T2

w1 = Angular velocity of driving gear (rads/s)

w2 = Angular velocity of driven gear (rads/s)

T1 = Number of teeth on driving gear

T2 = Number of teeth on driven gear

Gear ratio i = 40/118

i = 0.3738

5.2 Speed Calculation

N1 = 45rpm

Z1 = T1 = 107

Z2 = T2 = 40

N2= ?

118 *45/60

X=132.75 rpm

N2=132.71

CHAPTER 6

RESULTS AND DISCUSSIONS

A lawn mower cycle was designed, fabricated and tested. The mower is powered by the pushing force of cycle. This grass cutting machine can be used by both rural as well as urban Dwellers. It is also affordable since the cost of production is low

6.1 DISCUSSION

The performance test of lawn mower cycle is carried out on a lawn.The machine was seen to be more effective when working in a dry soil condition, because there is proper gripping of the tyres in a dry condition of the soil.

6.2 APPLICATION

A lawn mower cycle is a machine used for cutting grass in lawns at the required height.

6.3 ADVANTAGES

1. Low Cost
2. They are less dangerous than rotary mowers.
3. Require little maintenance.
4. Are environmentally friendly.
5. Produce little noise.
6. Are easy to transport and store.
7. Don’t stir up dust or emit harmful fumes.
8. Don’t fill debris around the yard.

6.4 DESIGN

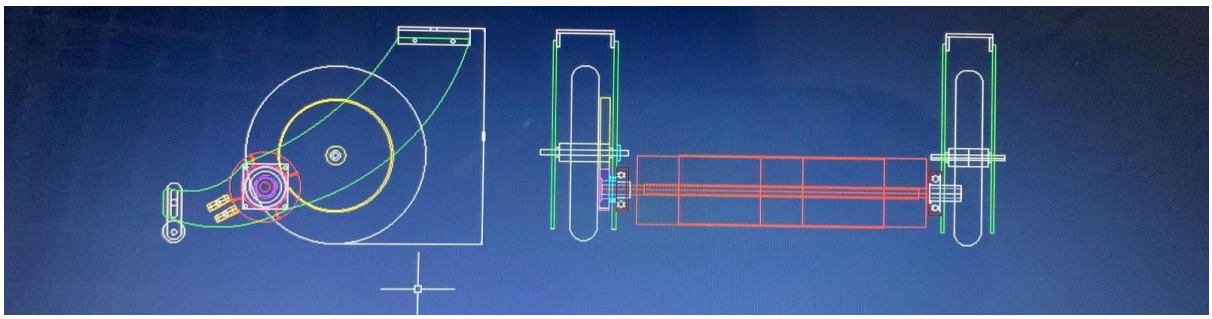

Fig 6.5 Design of mower assembly

6.6 ESTIMATE

A manufacturing process concerned with conversion of raw materials into finished Products with the help of labour and other services. In order to compute the cost of each of These factors the cost of manufacturing is subdivided into what are known as elements of cost. Elements of cost are the primary classifications of cost according to the factors upon which Expenditure is incurred the elements of cost that constitute total cost of a product are:

- Material cost
- Labour costs

Table 6.1 COST ESTIMATION

SI.No	Part Name	Cost
1.	Blade	1800
2.	Free wheel	160
3.	Spur (small)	300
4.	Spur (long)	400
5.	L blade	120
6.	Wheel	300
7.	Ms sheet	1700
8.	Keyway	80
9.	Bearing	420
10.	Bright Material	440
11.	Square rod	100
12.	Nut bolt	60
13.	Nut and bolt	62
14.	Rectangle rod	170
15.	Washer	20
16.	Bolt	14

Total Material Cost – 5916

TABLE 6.2 Working Cost

SI.No	Part Name	Cost
1	Bear housing boring	1000
2	Sheet Machining	500
3	Welding	180
4	Grinding	70
5	Cutting	10
6	Fitting	100
7	Flat blade grinding	50
8	Rework Turning	70
9	Gear and wheel fit	200
10	Sparking	100
11	Painting	175
12	Bolt	100
13	Cutting	50
14	Brittle	115
15.	Grinding	50
16.	Drilling	100

Total Working Cost - 2920

worker - 750

Total Cost for the Completion = 9586

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 CONCLUSION

The aim of our project is to design, fabricate a lawn mower cycle. This does not have Engine and is powered by a cycle. The machine is simply powered by the pushing force of a Cycle. It is also affordable since the cost of production is low. This project helped us to Improve our practical knowledge and also to express a new idea on the work shop. However, By completing this project, we feel that our aim and objectives of the project is fulfilled.

7.2 FUTURE ENHANCEMENTS

7.2.1 Energy storage

The Lawn mower cycle can be modified to an electric hybrid lawn mower, getting its Power from a battery and by human power given by pedalling. It would increase the overall Capacity of the machine as more energy would be available.

7.2.2 Cargo Cycle

By Providing the basket in front we can carry our needs.We can place the basket in front by removing the mower frame. since it can dismantle easily.

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