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PAPER REVIEW ON BICYCLE OPERATED MILKING MACHINE

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ABSTRACT

Modern milking machines extract milk from the dairy cow by applying a vacuum to the teat creating a pressure difference that results in milk flowing from the teat. Vacuum is applied by placing the teat into a cup in which the interior of the cup is subjected to a vacuum. The vacuum must be periodically reduced or removed to provide the teat with a rest period. The rest period is required because the vacuum causes the fluids (blood and other fluids) to accumulate in the teat causing congestion.

Modern conventional milking machines attempt to provide this rest period by periodically applying a higher pressure (atmospheric) to the exterior of the cup causing the cup to collapse toward the teat. The typical conventional milking machine will thereby reduce the vacuum level on the teat. The periodic liner action created by the pulsing of higher pressure on the exterior of the liner is provided by a pulsates.

I. INTRODUCTION

INTRODUCTION OF TOPIC:

For milking a cow the required vacuum pressure is approximately -41Kpa. This pressure can be achieved with the help of piston cylinder arrangement. The vacuum is generated inside the kettle by the suction of air with the help of piston moving inside the cylinder actuated with the help of single slider crank chain mechanism.

Now a day's increasing busy schedules of human due to lose the maintainability. So we develop a manual Milking machine is driven by Manpower, through a linkage. This machine is useful for human exercise. In this project we use crank chain mechanism which are operated by bicycle through a operating pedal. In market hand operated, battery operated and automatic operated milking machines are available but cost are more, so we want to use manual operated milking machine for vacuum creation.

The manual milking machines extract milk from the dairy cow by applying a vacuum to the teat creating a pressure difference that results in milk flowing from the teat. Vacuum is applied by placing the teat into a liner in which the interior of the liner is subjected to a vacuum. The vacuum must be periodically reduced or removed to provide the teat with a rest period. The rest period is required because the vacuum causes the fluids (blood and other fluids) to accumulate in the teat causing congestion

The main benefit of this system is cost effective over the other available systems with considerable reliability. There have been numerous published studies documenting the effect of this milking action on the teat. This study evaluates the changes in the teat structure after being milked with both conventional wide and narrow bore cup and the associated typical US style conventional pulsation and the Irish Dairy master style pulsation.

II. IDEA OF PROJECT

One of the member went to krushi exhibition, manchar .We are seen a milking machine. Which is operated on a electricity energy. In this machine operate on electric power by piston cylinder arrangement.

In this milking machine also operated in manual, but this arrangement not smoothly work. Then we use the electromotive force to move a piston cylinder arrangement with the help of electromagnet and permanent magnet. After making a mini project on electromagnet, so we some problem arising like less motive force.

Then again idea from guide Prof. Patil A.S. sir. To move the piston cylinder with the help of slider crank mechanism, through a chain sprocket and pulley arrangement.

III. LITERATURE REVIEW

1. Cow milker 'l.o.colvin' in Jan 1864.
2. Electromotor and vacuum pump "Robert rous, jan kuderk" in Oct 1870.
3. Evaluation of the Impact of Milking Machine Design on Teat Swelling, William Gehm 9502 NYS.
4. Milking machine research: Douglas J. Reinemann, Graeme A. Mein and Misty Davis-Johnson, January 2003.
5. Automatic milking: state of the art in Europe and North America, Kees De Koning, Jack Rodenburg..
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IV. COMPONENT

7. Piston and cylinder
8. Teat cup
9. Bearing
10. Hollow shaft
11. Bearing
12. Cattle
13. Pressure gauge
14. Pulley
15. Non-return valve

V. PROBLEM DEFINITION AND SOLUTION

PROBLEM DEFINITION SCOPE

Safe milking of cow/buffaloes is a requirement across rural India. In rural India availability of skilled labor for milking is also a problem now days. Adding to this is the fact that milking by hand is not considered healthy or hygienic anymore. Power operated milking machines are available in the market which are very expensive, suitable and affordable only for large cattle farms.

Finding skilled labor for milking a small herd of cows is a problem often faced by a small-time farmer. Adding to this is the fact that milking by hand is not considered healthy or hygienic anymore. But milking using a machine is a luxury which only a large farm or dairy house can boast of, calling for a huge investment in power supply and machinery. All of these set school teacher-farmer, Raghava Gowda, thinking very hard about developing an alternate means of mechanized milking which would be affordable to all farmers.

VI. WORKING

From the beginning and still today, bicycles have been and are employed for many uses. The manual milking machine man operate a pedal to transmit power to chain sprocket the chain sprocket having two gear one is driver gear which is connect to pedal shaft which transmit power to driven or sprocket. the driver gear having 44 teeth and driven gear 18 teeth. it means the driver gear increase speed of driven gear .then sprocket is placed on a axle shaft which is mounted in hollow shaft by placing a ball bearing in inner surface of hollow shaft in opposite end of hollow shaft and the hollow shaft is fixed mount on a frame . The purpose of a ball bearing is to reduce rotational friction and support radial and axial loads. It achieves this by using at least two races to contain the balls and transmit the loads through the balls. In most applications, one race is stationary and the other is attached to the rotating assembly (e.g., a hub or shaft). As one of the bearing races rotates it causes the balls to rotate as well. Because the balls are rolling they have a much lower coefficient of friction than if two flat surfaces were sliding against each other.

Another end of axle shaft inserted to the pulley. A pulley is a wheel on an axle or shaft that is designed to support movement and change of direction of a cable or belt along its circumference Pulleys are used in a variety of ways to lift loads, apply forces, and to transmit power the pulley having one hole apart from center of pulley for a joining of link which transmit the rotary motion to the linear motion.

The link connected to the head of piston rod which moves linearly forward and backward movement The piston reciprocate in cylinder in backward direction which suck the vacuum pressure from cattle through connected plastic

tube also it goes forward direction to required less force compare to backward stroke the non-return valve connect to tube which allows flow in one direction the create a pressure at 300-400 mm of Hg it sufficient to extracting milk from cows and in the milking cluster or cup inserting a teats due to vacuum the cup automatically grip to teat and valves are turn on one by one due to vacuum milk is extracted from the cows and it stored in cattle up to 15lit capacity again system is remove from cow and placed it proper place.

WORKING DIAGRAM:



IMAGE 1

VII. ADVANTAGES & LIMITATIONS

ADVANTAGES:

1. Skilled manpower not required.
2. Easy to operate and low maintenance.
3. It is more reliable.
4. Cycling offers convenience cardiovascular.
5. It can be start & stop quickly.
6. Working is vibration free.
7. Less noise.

LIMITATIONS:

1. Time required as compare to electric machine is more.
2. Periodic lubrication is required

VIII. CONCLUSION

The equipment is useful for removal of milk by utilizing less energy gives better performance. After making this innovative system, we conclude that this system totally operated on man power. Therefore no requirement of energy means type of system is useful for save natural energy source. System gives better performance considering manual milking machine

REFERENCES

1. *Cow milker 'l.o.colvin' in Jan 1864.*
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7. *Design data book kalaikathir Achchagam.*
8. *Design of machine element V.B. Bhandari.*