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BABY CRADLE USING SINGLE SLIDER CRANK MECHANISM

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Abstract: *Technology refers to the collection of tool that makes easier to me create, manage and exchange information and also reduce the effort. This recent technology is used by the human to reduce the human effort in day to day life. Cradle is an appliance which is used to carry a baby. It oscillates automatically with certain speed so that the baby can sleep with comfort. A slider crank mechanism is used to convert rotary motion into oscillatory motion of cradle. Reduce human effort high strength portable and reduce time of work are certain advantages of this model.*

KeyWords: **Technology, human effort, Cradle, slider crank mechanism, reduce time.**

1.Introduction

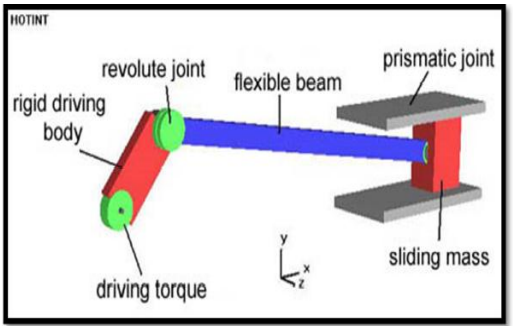
The project idea develops from the very fact that a woman finds it difficult to concentrate on a child owing to her busy schedule of house life. The situation aggravates when she has a job or has some household business since she can neither compromise with her work nor she can ignore her child's needs. Many devices are available to ease her task and help her to balance between her work and the needs for her child. Our Automated Cradle proposes to be one of them. Unlike some of other existing designs, which uses a single slider crank mechanism used for swing makes transition smooth. The main objective of this automated cradle is to control all the features of cradle by a regulator while simultaneously doing some other task.

The slider crank mechanism is used to swing the platform of the child. The slider crank mechanism is used to transform rotational motion into translational motion by means of rotating driving beam, a connection rod and sliding body.

A slider crank mechanism converts circular motion of the crank into linear motion of slider. Kinematic inversion slider crank mechanism produces ordinary Whitworth quick return mechanism. It has three revolute joints and one prismatic joint.

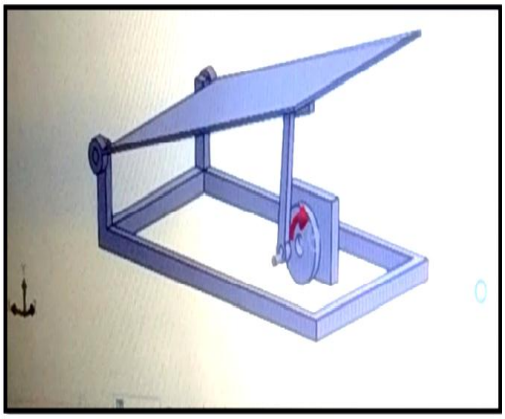
The total distance covered by slider between it's two extreme positions is called path length. In order for crank to fully rotate. It's advanced features will mitigate the bourdon of constant monitoring by the user. The features are as stated below;

- The cradle design is stereotypically Indian and the push and pull has conventionally given by hand is replaced by automatic oscillations using DC motor.
- The automatic swing can be operated at two different speeds according to requirement.



2. Working Principle

It works on slider crank mechanism. Arrangement of mechanical parts designed to convert straight-line motion to rotary motion, as in a reciprocating piston engine, or to convert rotary motion to straight-line motion, as in a reciprocating piston pump. This mechanism is made of a driving crank and of a driven slider crank. Thus a swinging motion is obtained in the carriage. Power supplied from the battery actuates. The main components involved in this project consist of DC motor, mechanical links, and battery. Bare the motor. Motor drives the drive ring crank. Thus power from motor is given to the driven link. Links attached to the bed oscillates it.



3. Literature Review

Yang Hu suggested an algorithm for adjusting the cradle swaying extent by the sensor signals. The cradle is made up of an adaptive swaying device and other sensors network. While baby is crying, the sensors network can judge the reason according to detecting parameters, giving the different signals to control circuit.

Steven Bang invented automatic baby rocker having a noise sensor to detect baby cry. Noise sensor consists of Electric MIC with a pre amplifier. Signal from noise sensor is fed to microcontroller, which is used to control the DC motor. Few colorful lights made up of LED are used to entertain the baby while being rocked. The system designed by Nitin Bhatnagar, Kshitij Shinghal, Amit Saxena, Niket Tiwari, Shubham Bhatnagar, Shushant Kumar helps parents and nurses in infant's care. The design aims at automatic swinging of cradle when baby cries. If the baby stops crying before 2 minutes, then the cradle will stop automatically after 3 minutes of swinging. It also sounds an alarm if baby cries for more than a stipulated time of 2 minutes indicating that baby needs attention and another alarm when mattress gets wet.

4. Project Background

The automatic baby cradle system is still new and does not much apply in local industry. The application of automatic baby cradle is rarely used excepting the developed big cities. The automatic baby cradle available in the market now-a-days is using the DC motor to provide the motion to the bassinet, the motor consumes the much power as well as it produces the noise also which disturb the baby and reduce the comfort level of the baby. Whereas sometimes starting of the baby cradle have jerk full motion. The basic components used in now-a-days baby cradle are controller, motor, power supply, timer, sensor etc. Various sensors are used to control the function of the

automatic baby cradle like voice sensor, wet sensor etc. The timer is set to the controller which provides the motion to the cradle for prior set time period.

5. Advantages

The requirement of automatic intelligent baby cradle is day by bay increasing. Especially in metropolitan cities. The benefits of Automatic cradle are:

- It is very easy to operate and it's reduces the manpower work. The user can adjust The cradle according to their comfort and use.
- User can adjust the time as per need of the parent's the how long cradle will move And the parents can finish their household work in that period
- Low cost, small size
- Easy to use and widely available
- Easy to conceal in security application
- Easy to interface
- Easy for Parents to monitor their baby.
- It can be used with all kind of baby.
- Its helps in keeping the baby in hygienic conditions

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