

Child Rescue System from Open Borewell

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Abstract - In present time, children fall in the Borewell due to the carelessness nature of the people in society. The currently available systems to save the child are less effective and costly too. Thus the society is in need of a new technique which is more efficient and effective. In most cases reported so far, a parallel hole is dug and then horizontal path is made to reach the child. It is not only a time taking process, but also risky in various ways. The borewell rescue system is capable of moving inside the same borewell where the child has been trapped and performs various actions to save the child. CCTV camera is used to continuously monitor the child's condition

Key Words: Gripper, bearing and rope.

1. INTRODUCTION

Our project titled as "Child rescue system from open borewell" has been undertaken with the aim to save a life. Borewell accidents are common due to uncovered openings of borewell. It is very difficult and risky to rescue the trapped children. A small delay in the rescue can cost the child his or her life. Lifting the child out of the narrow hole of the borewell is not easy. The child who has suffered the trauma of the fall is confined to a smaller area where with the passage of time, the supply of oxygen reduces. The main objective of this project is to design and construct a portable system which is cost effective, quick in action and accurate.

1.1. NEED OF PROPOSED WORK

- ★ There is no interaction of child inside borewell and the parents.
- ★ Children fall in the Borewell due to the carelessness nature of the people in society.
- ★ The currently available systems are less effective and costly too.
- ★ In most cases reported so far, a parallel hole is dug and then horizontal path is made to reach

the child. It is not only a time taking process, but also risky in various ways.

To overcome these lapses, we have designed and implemented a "Child Rescue System from Open Borewells" as our B.Tech. project. Which has following advantages: -

- ★ System is capable to get inside the same borewell the child's fall. There is no need to dig a parallel hole.
- ★ It saves time with this system to rescue the child.
- ★ The child can be taken out of borewell safely

1.2 OBJECTIVE

- ★ The objective of our B.E final year project work entitled "Child Rescue System from Open Borewells" are as follows:
- ★ Manually monitoring the child with the help of camera and controlling unit of system.
- ★ Communicating with the system by sending appropriate commands to it and activate suitable motors.
- ★ Once the system has reached proximity of child, it is stopped immediately and is given commands by the controlling device to perform the closing of the systemic arms.
- ★ Controlling a system to take off the child inside the bore well, which is controlled by the person from outside.

2. EXISTING METHOD

Robots are designed to help the human operators in the rescue mission. Rescue team normally follows the parallel pit process to save the child. First the team will find the depth of the child in the bore well by using rope. Earth moving vehicles are used to dig the parallel pit near the bore hole. It takes long time. At the time the child would have died due to lack of oxygen. Due to

the lack of visualization the rescue team faces many difficulties.



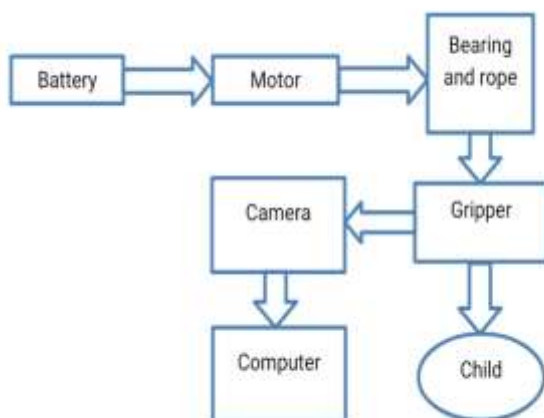
3. PROPOSED METHOD

The entire system is manually controlled by the user. The functional block diagram of Borewell Rescue System is as shown in figure:

4. HARDWARE DESCRIPTION

4.1 MOTOR

An electric motor is an electrical machine that converts electrical energy into mechanical energy. The reverse conversion of mechanical energy into electrical energy is done by an electric generator.



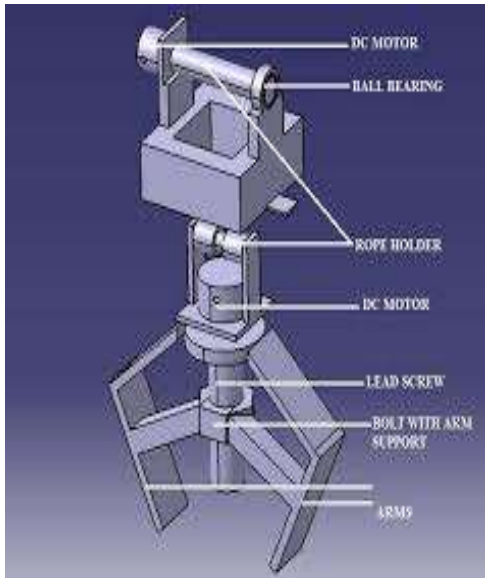
In normal motoring mode, most electric motors operate through the interaction between an electric motor's magnetic field and winding currents to generate force within the motor. In certain applications, such as in the transportation industry with traction motors, electric motors can operate in both motoring and generating or braking modes to also produce electrical energy from mechanical energy.

4.2 BEARING

A bearing is a machine element that constrains relative motion and reduces friction between moving parts to only the desired motion. The design of the bearing may, for example, provide for free (linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the (vectors of normal forces that bear on the moving parts. Many bearings also facilitate the desired motion as much as possible, such as by minimizing friction. Bearings are classified broadly according to the type of operation, the motions allowed, or to the directions of the loads (forces) applied to the parts.

4.3 GRIPPER

- ★ It can grasp a child when he/she fell inside the borewell. It includes camera and light to focus where the child is located. The basic principle of the gripper is to lift the child from the borewell. For effectiveness the gripper should be simple designed and manufactured.
- ★ It has two jaws to grab the child in a correct position. The gripper essential action is to be opening and closing the arm by which it can grab the child easily. And we need to consider some factors like the weight of the child, actuation method, child position, etc.
- ★ The gripper consists of a basic body, in which two claws are arranged at an angle of 180 to each other. When the gripper is lowered in the direction of the child the claws are pushed open by the collective space.
- ★ The claws are pressed into the borewell of the child by the connecting wire when the final gripping position is reached



5.METHODOLOGY

- ★ All the parts of the system are controlled manually outside the borewell using 2 DPDT Switches(1 for rotating DC motor clockwise and anticlockwise, 2 for the opening and closing of the claws).
- ★ System is taken inside the borewell using pulley and rope mechanism to reach up to the child by visualizing through camera A/V output.
- ★ Child live position is captured through camera.
- ★ The harness of the system used in two arms is very soft so that it do not hurt the child while gripping.
- ★ The system is rotated using DC motor according to the child position The child is gripped from suitable position and then the system is taken out from the borewell by pulling the rope
- ★ Hence the child can be safely taken out From the borewell using this Mechanism.

4.4 BATTERY

An electric battery is a device consisting of one or more electrochemical cells that convert stored chemical energy into electrical energy. Each cell contains a positive terminal, or cathode, and a negative terminal, or anode. Electrolytes allow ions to move between the electrodes and terminals, which allows current to flow out of the battery to perform work.



4.5 CAMERA AND COMPUTER

A camera is a device used to capture images, either as still photographs or as sequences of moving images (movies or videos). The term comes from the Latin camera obscura for "dark chamber" for an early mechanism of projecting images where an entire room functioned as a real-time imaging system; the modern camera evolved from the camera obscura. Here, the camera Records the child position And its visible on the Computer so that we can easily able to Locate the child Position

CONCLUSION

Human life is precious. Our bore well child rescue system is a significant attempt to save the life of the victim of bore well accidents. Besides this, the unique capability of climbing through vertical and inclined pipes makes wide scope of application for this machine in manufacturing industries and other relevant fields. In the current design of bore well child saver machine has been made to suit every possible situation may occur in rescuing operation. Further, we would like to conclude that with the help of our project, we would be able to rescue the child safely within short period of time.

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