



BORE WELL TRAPPED PEOPLE RESCUE SYSTEM

S.Ganesh Ranjith¹ P.Jagadeeswaran² S.Rajkumar³ P.Ranjith kumar⁴ R.Sampath⁵

¹ Final year Mechanical Engineering, Sengunthar Engineering College, Tiruchengode

² Assistant Professor, Department of Mechanical Engineering, Sengunthar Engineering College, Tiruchengode

³ Final year Mechanical Engineering, Sengunthar Engineering College, Tiruchengode

⁴ Final year Mechanical Engineering, Sengunthar Engineering College, Tiruchengode

⁵ Final year Mechanical Engineering, Sengunthar Engineering College, Tiruchengode

ABSTRACT

In the past few years, there have been several accidents of children falling into abandoned bore wells in India. Abandoned bore wells that have turned into death pits for children. The problem is all over India. Rescue teams spend hours and sometimes days in futile attempts to save these little kids. A lot of money is also spent in these missions. In most cases they are unable to save the kids. Such events have happened umpteen times in the past, and every time either the government or the bureaucracy is blamed. The rescue process to save the child from bore well is a long and complicated process now. The rescue team tries to approach the victim from a parallel well that take about 20-60 hours to dig. This complicated process makes 70% of the rescue operations fail. The design of handling system is made in such a way that the baby/victim never gets hurt and this rescue system is sent through the same well where the victim is felt inside to bring back the victim safe through an autonomous control of drives. Our design constitutes a best Ergonomic Design and performs safest rescue operation.

II. INTRODUCTION

Today's major problem faced by human is water scarcity, which leads to a large number of bore wells being sunk. These bore wells in turn have started to take many innocent lives. Bores which generate water and subsequently got depleted are left uncovered. Small children without noticing the hole dug for the bore well slip in and get trapped. There is no befitting technique to rescue victims of such accidents. When the make shift local arrangements does not work, Army is called in. In most cases reported so far, a parallel hole is dug up and then a horizontal path is made to reach to the victim's body. It is not only a time taking process, but also risky in various ways. Moreover it involves a lot of energy and expensive resources which are not easily available everywhere and in this process we need big space around the trapped bore that we can dig a parallel bore.

These ad-hoc approaches involve heavy risks including the possibility of injuries to the victim's body during the rescue operations. Also, the body may trap further in the debris and the crisis deepens even more means death. In most cases, we trust on some makeshift arrangements. In such methods some kind of hooks are employed to hold the sufferers clothes and body. This may cause wounds on the body of the subject. A single accident creates a big hue and cry spreading a sense of panic among the masses. It draws a lot of undue attention and criticism of the civil administration. Heavy expenses have also reportedly obtain in most cases.

III. CONSTRUCTION

The gripper which grabs the victim is functioned with the help of lead screw arrangement. The lead screw is powered by means of dc motor which is directly linked with it and get connected to the fixture for providing the stabilized rotation. On its other end the two separate links are attached with it which is hinged to the fixture frame on its other end. One end of the gripper link is also hinged with this link, thus the motion of link affects the gripper link to perform its gripping operation. These entire gripper arrangement is hanged by the rope which is rolled over the winch drum. This winch drum is supported to the base frame with the help of bearing at its end for obtaining free rotation. The rotation of winch drum is powered by means of separate d

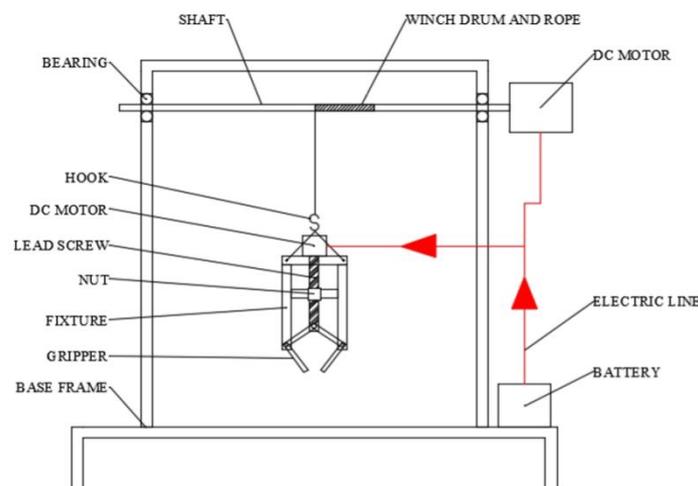


Fig.3.1 Layout of Bore well Trapped Rescue System

IV. WORKING PRINCIPLE

The rescue system arrangement is placed near the bore well where the victim is felt inside and it is verified that the gripper is properly inserted into the bore well without any distractions. Initially the dc motor for powering the winch drum is turned on to rotate counter clock wise, thus the rope wound on the drum get released with respect to the rotation experienced on the drum. The extension of rope causes the gripper which is tied with it to travel inside the bore well due to the gravitational force, thus the gripper arrangement reaches victim. At that position the winch drum motor gets turned off and the motor to power the gripper is turned on to rotate clock wise thus the victim get gripped by the gripper and once the victim get held tightly the gripper motor is stopped and again the winch drum motor is activated in clock wise direction. This causes the rope to wound on the winch drum and makes the gripper with victim to move up. Once the victim had reached ground level the motor is turned off and the gripper motor is activated in anti-clock wise direction to release the victim.

V. MAJOR COMPONENTS USED

1. Bearing
2. Shaft
3. D C Motor

Second International Conference on Nexgen Technologies

Sengunthar Engineering College, Tiruchengode, Namakkal Dist. Tamilnadu (India)



8th - 9th March 2019

www.conferenceworld.in

ISBN : 978-93-87793-75-0

4. Battery
5. Spur Gear
6. Lead Screw
7. Frame
8. Metal Strip
9. Rope
10. Gripper

VI. ADVANTAGES

- The system is controlled by simple switch activation and even complete automation can also be in build to this system for future advancement
- Even a less skilled operators can handle and use this system to rescue the victim
- Less maintenance
- This system is totally ecofriendly as the dc source is used for its operation
- This method is relatively cheap from the initial method of rescuing through digging a parallel well
- The bore well rescue system is highly safe for the victim who have been carried for rescue
- Time consumption for performing the rescue operation is highly reduce

VII. CONCLUSION

In the last few years a lot of child life has been lost due to the uncovered bore well accidents. In this proposed System the Rescue operation will be completed shortly and trapped child in bore well safely. This project is used to reduce human efforts in bore well rescuing operation. The process in bore well is continuously monitored with the help of the camera, which is connected in the outer cover. The structure is made strong enough to sustain all possible loads.

REFERENCES

- [1] B Bharathi, B Suchitha Samuel, Design and Construction of Rescue Robot and Pipeline Inspection Using Zigbee, International Journal of Scientific Engineering and Research , 1(2), 2013, 42-49.
- [2] Palwinder Kaur, Ravinder Kaur, Gurpreet Singh, Pipeline Inspection and Bore Well Rescue Robot, International Journal of Research in Engineering and Technology, 2(5), 2014, 04-12.
- [3] K Saran, S Vignesh, Marlon Jones Louis, Bore-well Rescue Robot, International Journal of Research Aeronautical and Mechanical Engineering, 1(4), 2014, 61-80.
- [4] V Venmathi, E Poorniya, S Sumathi, Borewell Rescue Robot, International Journal of Computer Applications, 1(3), 2015, 14-23.
- [5] Chen, H., Chang,L., Design and Implementation of a ZigBee-Based Wireless Automatic Meter Reading System Przegład Elektrotechniczny (Electrical Review)
- [6] Pipeline inspection and borewell rescue robot “Palwinder kaur, Ravinder kaur, Gurpreet singh”. IEEE, VOL3
- [7] Safety balloon-Direct web search on google.com
- [8] Manish Raj, P.Chakraborty and G.C.Nandi “Rescue robotics in bore well Environment” Cornell university library [v1].