ADVANCED CHILD RESCUE SYSTEM FROM OPEN BORE-WELL USING ARDUINO

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ABSTRACT

People in India have been dealing with terrible and distressing situations over the last few days. over example, a youngster fell down an open bore well and hit a hole, trapping them. The method of rescuing a trapped kid from a bore well is very hazardous and challenging in comparison to other types of catastrophes. The child-saving methods now in use are also more expensive and less successful. The youngster has to be saved for longer than a day. Here, the clipper uses a remote controller to pick up and position the youngster who is caught within the hole in order to rescue it. The rope that is knotted at its hands manually leaves the cutter within. There would be no need to drill a hole parallel to the bore well in this alternate scenario. Additionally, it has a camera attached to the clipper that is used to watch the youngster. We are able to see the child's health and appearance thanks to this camera.

I. INTRODUCTION

According to the existing framework, the main issue that people deal with on a daily basis is the rising shortage of water. Young children get stuck when they fall down the hole excavated for the bore-well and fail to notice it. These mishaps are typically the result of the child's playfulness or lack of attention. The development of new techniques offers a practical chance to develop robot capabilities and raise knowledge of novel control theory approaches. Numerous sophisticated robotic applications may make advantage of the current robot control technology. Robots have shown remarkable proficiency in manipulating objects in controlled and virtual situations. If a youngster fell into an exposed borehole, rescue efforts would very certainly be unsuccessful. Our goal is to create a robot that can remove a stuck corpse in a methodical manner. It will be a lightweight device that fits into a bore-well with ease and holds the trapped body in a methodical manner. There won't be a need to drill a hole parallel to the borewell using this method. Compared to the convectional approach, we can rescue the youngster in less time using this gadget. and the "Child Rescue System in Open Bore-Well" system. In such incidents, very few people have been spared. In a few of these instances, it was difficult to retrieve the subject's deceased corpse. Many people were allegedly harmed, even if they were saved too late. We have a different (workable) suggestion to address these issues with the rescue operations. Our goal is to create a robot that can remove a stuck corpse in a methodical manner. A gear assembly will manage and support the cable wire that supports and holds up this machine assembly. This other situation eliminates the need to excavate a whole trench parallel to the bore-well. The activity will be carried out by the remotely operated robot as it descends the bore hole. This alternate method will also save a great deal of additional headaches. These kids are stuck in an exposed bore-well, and rescuing them is not only challenging but dangerous as well. A little pause in the rescue efforts might result in the child's death. It's also not very simple to move the youngster out of the little space within the bore wells. These sorts of problems may be resolved with the help of the robot for the bore well rescue system. It is quick, affordable, and secure.

- This project's primary goal is to develop and build a portable system that is accurate, fast to use, and reasonably priced.
- The Borewell Rescue System can move about within the well and carries out tasks in response to orders from the operator.
- When the system gets close to a youngster, it stops right away and receives instructions from the controlling device to close the systemic arms.
- The gas sensor in this device can detect any gas that is in close proximity to the youngster.
- Using the system's camera and controlling device, observe the youngster manually.

II. LITERATURE SURVEY

In addition to books and websites, we have studied the research papers listed below in order to finalise the goal of our project, "Child Rescue System from

Open Borewells." The majority of the articles having to do with the technology that we used in this project. 1. Pandey Sumit. The explanation revolves on saving babies that had fallen into a borewell. There have been several reports of kid deaths so far. Owing to the low water level, bore wells are dug deeper. The baby's rescue is the project's main goal. Digging a parallel trench to carry out the rescue takes more than a day, and so far there has been no real progress. The project's main accomplishment is that the youngster will be saved before it descends too far since it uses infrared signals for communication. An alarm bell on a mobile phone sounds when the infrared signal breaks two inches diametrically under the bore-well's ground surface because of an obstruction. To stop the babies from falling further into the well, a stake that is maintained a few feet lower in the bore-well shuts the bore. A large number of these incidents occur in agricultural borewells. 2. Professor Chandra Kumar H S, describe the several incidents in which kids have fallen into an exposed, abandoned bore-well and became imprisoned. For kids, abandoned bore wells seem to be death traps. Due to these bore-wells, several innocent lives have begun to be lost. In these situations, rescuing children from boreholes often involves a labour-intensive, large-scale machinery procedure. The purpose of this study is to rescue children who fall into borewells. To this end, a novel design is proposed, in which a sensor is placed above the borewell hole to aid detect when a kid goes inside. The automated horizontal closure, which is maintained at around a 3-foot depth, shuts automatically if the device detects a kid, keeping them from plunging below. It has the ability to keep an eye on the kid who is stuck and provide a platform for lifting them up using motors. Three blocks that are positioned at a 120-degree angle to one another are pushed towards the side of the bore hole by the gear mechanism that is turned by the motor at the top. The bore-well wall is solidly supported by the whole system. 3. M R Chaitra provides a broad explanation based on the bore well kid rescue. These days, a youngster becomes stuck after falling into an unoccupied bore hole that is left open. Digging a hole closer to the bore well is standard procedure for rescuing the infant. It is difficult and dangerous to rescue the captive infant using such rationale. Retrieving the infant from the bore well requires more time. Here, we're going to propose a robotic system that uses pneumatic arms to pick up objects and fasten a harness on the youngster. The robot will also have a teleconferencing system installed so that it may speak with the youngster. Within the uncontrolled bore well, the mechanical system is in motion. The Arduino receives commands from the user and uses them to operate the mechanical arrangement. In order to activate the DC motor, the hardware is connected to the PC. In a shorter amount of time, this kind of technology may safely remove a baby that has been stuck in the bore hole. We are use an IP camera, Bluetooth, and a Microcontroller 8051 (newton) to do this. 4. A situation that Sumalatha suggested Numerous occurrences involving abandoned borewells that are developing into death wells have been documented. These borewells are trapping a lot of defenceless kids, who end up drowning. Although borewells are meant to save lives, many innocent lives have been lost as a result of these borewells. Several times, large machinery and a large number of people are involved in the rescue efforts. These rescue efforts are often very drawn-out, difficult, and time-consuming procedures. The idea offers a quick and easy way to get the kid out of the borewell. The conventional method of rescuing the infant involves excavating a parallel trench next to the bore hole. To rescue the imprisoned infant, this is a dangerous, time-consuming, and complex procedure. The mechanical apparatus in the suggested technique travels within the borewell channel and adjusts its gripper arm in response to user inputs. The Arduino setup is utilised to operate the mechanical setup, and the hardware is interfaced with the PC. 5.According to Jayasudha.M. Saravanan, the main annoyance is the predicted shortage of water. Burrow bore wells were started by humans as a solution to these problems. The great majority of people in our country live in agricultural areas and rely on water for irrigation systems. Unintentionally, kids stumble into the exposed bore well, which releases water. Saving the youngster who is stuck in the bore well is a difficult task. Currently, the technique for digging a parallel pit beside the bore well that is the same depth as the child and creates a channel that interfaces with the two wells is used to complete the rescue mission. In order to allay this worry, a cleverly constructed robot is made in such a manner that it not only frees the trapped youngster but also quickly uses a webcam to watch after them. It is made up of two modules: the protection system and the rescue system.

III. PROPOSED SYSTEM CONFIGURATION

Since the bore wells are totally enclosed with casing after the motors are installed, they do not provide any hazard even after they have successfully reached the water. When bore-wells

fail to reach the maximum depth in the water, they remain exposed and numerous. These uncapped bore wells are known as "dry" or "dead" borewells, because they pose a risk to children. The number of reported cases involving kid deaths from borewells is increasing daily. To date, physical rescue techniques have been used to save the youngster who fell down the bore-well. whereby a large hole is excavated next to the bore well all the way down to the child's stuck spot. Numerous personnel (military, paramedical, etc.) and pieces of equipment (JCBs, tractors, etc.) are utilised in this operation. A little delay in these resource accumulations might lower the likelihood of rescuing the youngster. The scenario becomes much worse if there are rocks beside the bore hole that are larger than a specific size. In these situations, the whole operation has to be started again at a different location. In these situations, the child's prospects of survival are very slim. Whatever the circumstance, a number of variables affect the success percentage, including the availability of equipment, the time it takes to get machinery to the scene, the availability of human resources, and most importantly, how quickly different government agencies respond. According to the 2011 NCRB research, abandoned bore wells in India cause an average of five fatalities per day.

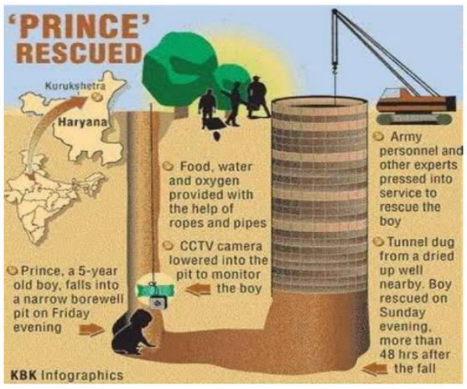

Fig 1 Existing System

In this project, the clipper will use a remote controller to pick up and position the youngster who is caught into the hole in order to rescue him. The rope that is knotted at its hands manually leaves the cutter within. There would be no need to drill a hole parallel to the bore well in this alternate scenario. Additionally, it has a camera attached to the clipper that is used to watch the youngster. We are able to see the child's health and appearance thanks to this camera.

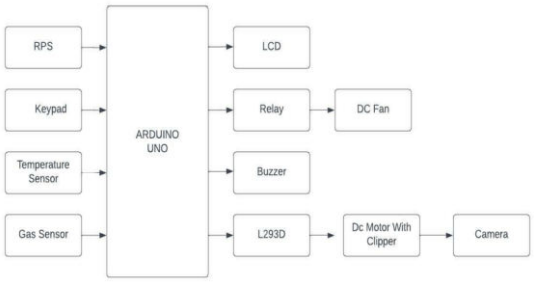

Fig 2 Block diagram

This block diagram There are several ways to save a kid from an open borewell, but more advanced and less complicated rescue tools are still required. Here, we're using a technique known as the Arduino-based kid rescue device from borewell. Digging the parallel hole next to the bore well all the way down to the child's stuck spot is not required with this approach. Therefore, this approach does not need more equipment or human resources. This technique uses a very sophisticated microcontroller and a precisely designed hand grasping device. An ATMEGA328P-based controller board is the Arduino UNO. Six of the device's fourteen digital input and output pins may be utilised as pwm outputs. With a 16 MHz ceramic resonator and six analogue inputs. An USB port. Reset buttons, an icsp/0 header, and a power jack A few input and output devices are included with the Arduino UNO. The input devices on the left side of the figure include a temperature sensor, smoke detector, keyboard, and rps. The input power required to drive the circuit is supplied by the regulated power supply, or RPS. When the voltage diode terminals are found using a temperature sensor, the temperature rises along with the voltage. Next is the smoke detector (MQ4), which ionises the air and creates a current flow between the plates. When it detects smoke, this smoke detector may also be utilised to give a signal fire alarm or buzzer. When smoke enters the chamber, it interferes with ion flow, which lowers current flow and sets off the buzzer.

ADVANTAGES

- Additionally, it may be used in a variety of applications where selecting items is done without the need for human intervention.
- Cost-effective and efficient design
- With the help of this initiative, we can rescue the youngster faster.
- Video Surveillance
- Minimal Manpower Needed

- The gadget has high dependability and is easily operated using a keypad joystick. It may be used several times. 5.2.

LIMITATIONS

- We need to inspect the belt mechanism.
- The sensors used in this experiment exhibit sensitivity.

IV. SCREENSHOTS

Fig 3 Final position of hardware kit

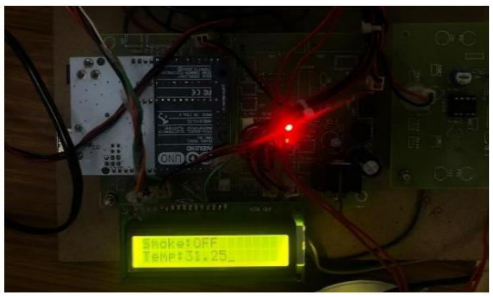

FIG 4 OUTPUT OF STAGE I RESULT

This project's first stage includes a temperature sensor to determine the temperature surrounding the kid and a gases sensor to detect any hazardous gases in the area. The monitor shows the temperature and those gases. By stage 1, we can determine whether or not the youngster is in a safe environment.

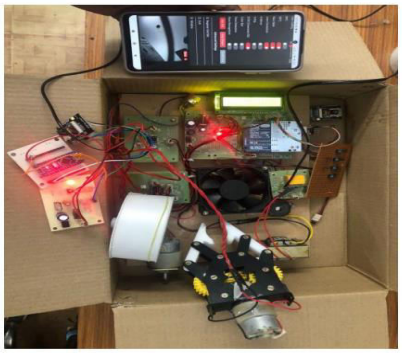

FIG 5 OUTPUT OF STAGE II RESULT

FIG 6 OBJECT PICK UP WITH HELP OF GRIPPER

Stage 2 involves a clipper connected to a kit that conducts the pick-and-place activity, which is used to remove children from holes and incorporates a camera so that we can see the children's conditions visually.

V. CONCLUSION

The primary goal of the "Smart and Safe child rescue system" is to save the lives of as many children as possible who fall into bore wells. Since it takes too long to dig a pit next to a bore well, many lives have been lost in the last ten years as a result of falling into one. This project is effectively carried out with the use of appropriate motors, arms, and cutting-edge technologies. Thus, it can be said that the suggested technique has the potential to save the lives of several kids who may otherwise fall into the bore well.

FUTURE SCOPE

By adding more components, this project will be utilised in other applications in the future. 1. This proposed system can deploy these robots into hazardous areas. By attaching a smoke sensor to the robot, we can obtain data regarding the concentration of smoke or other gases in the corresponding fields. The sensor will identify any hazardous gases and provide information to the microcontroller, which in turn provides information to the transceiver, which provides data to the PC. 2. The addition of a gas sensor, which is used to detect any potentially fatal gas within the bore hole, will be a future improvement to our work. Despite this, there is a test for oxygen that may be linked to and used to give the child oxygen. 3. To extend the time it takes to rescue someone from a bore hole, a hand gesture mechanism is used in lieu of the potentiometer.

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