

AUTOMATION OF BORE WELL PIPE LIFTER AND TRANSPORTATION

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ABSTRACT

An innovative concept proposed in this paper is to handle bore well rescue operation. Children often falls down in bore hole which is left uncovered and get trapped. It is difficult as well as risky to rescue trapped child from bore hole. Hence we propose a system of designing robots for the rescue of a child in a bore hole. We aid the child by continuous monitoring and supply of necessary items to survive using technical methods. Bores which yielded water and subsequently got depleted are left uncovered and small children without noticing get trapped inside. To aid in such a life threatening situation we hereby propose 'bore well pipe lifter'

Keywords : Rescue, Bore hole, Handle bore, Bore well pipe lifter, conventional.

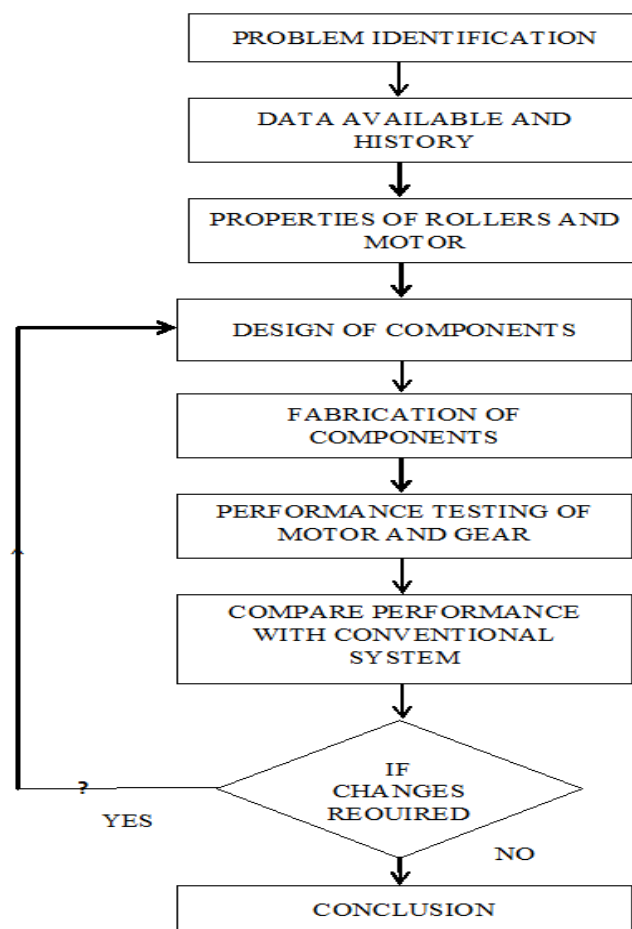
I. INTRODUCTION

Bore wells are deep and the submersible pump is at the bottom of the long bore well pipe. Conventionally the bore well pipe and pump are lifted out of the bore well using which and pulley block. This is a very time consuming and laborious work . The bore well pipe lifter and transportation machine gives more than 3m /min transmfer rate which makes the mounting and dismounting of the submersible pump in bore wells very fast and very easy. So that the total integrated information and steps to be followed during Bore well installation and lifting is to be focused. In the ancient days these process carry out with the help of chain pulley mechanism. This method is traditional method and very time consuming. This chain pulley mechanism also required no of labour to carry out the process. The main purpose behind this project is to lift the pump and motor in less time and human efforts with very simple and convenient mechanism. The additional benefit of this project is to lift anything fall down in the bore(child ,any object). To design development of three roller holding mechanism for pipe lifting.

S.Prithiviraj, S.Ravikumar they conclude that the tip in the SPR hook carries the entire weight of the pipe. The future work can be continued by changing material and altering the dimensions. **Venmathi.V, Monisha, Muthuselvi, Poorani, Ramya** they conclude that 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. **Mayur N. Adhude Dr. Sharad S. Chaudhari** they conclude that In this process the large amount of rotation of chain pulley block is completed. **Simi Simon, Minna jose, Mariya jessy gogy, Vismaya k d, Swathi mukundan** they have discussed about India according to the NCRB report of 2011 there are 5

average deaths per day in the license bore wells. At present there is no proper solution for this problem. **John Jose Pattery** He concludes that rescue robot can also be used in rescuing people stuck in mine holes and manholes. **K.Saran, S.Vignesh, Marlon Jones Louis** they conclude that the proposed model has only few modifications and more advantages, it surely improves the rescue operation with less time. **J. Prabhakaran, C. Prabakaran, B. Prabu** they had discussed about pebbles are derived to the distributor through the belt conveyor. Then the distributor spreads the pebbles and fills the bore filter in a structural manner. We have studied papers and find out current research gap.

II. METHODOLOGY



III. COSTRUCTION AND WORKING:

3.1. Construction

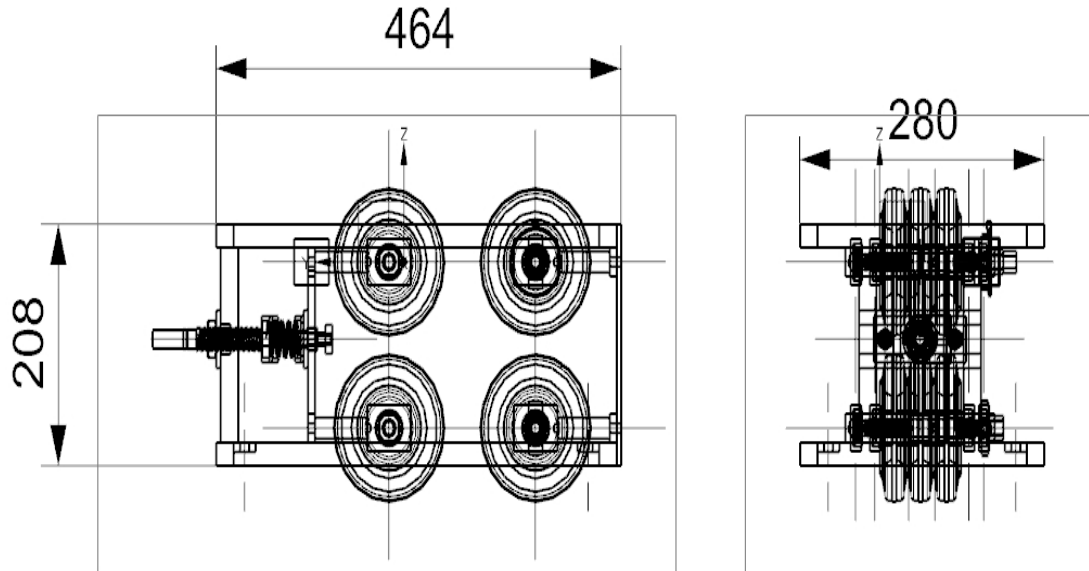


Fig. 01 Drafting of Model

3.2 Motor selection

Selection of motor is done from standard motors available in geared motors form: The Geared motors are basically DC motors 12 Volt DC coupled to planetary gear set to amplify the torque available at the shaft end. Motor selected for above application is :

Motor : 12 Volt DC motor, 18 rpm, 20watt---1:55 RATIO GEARED

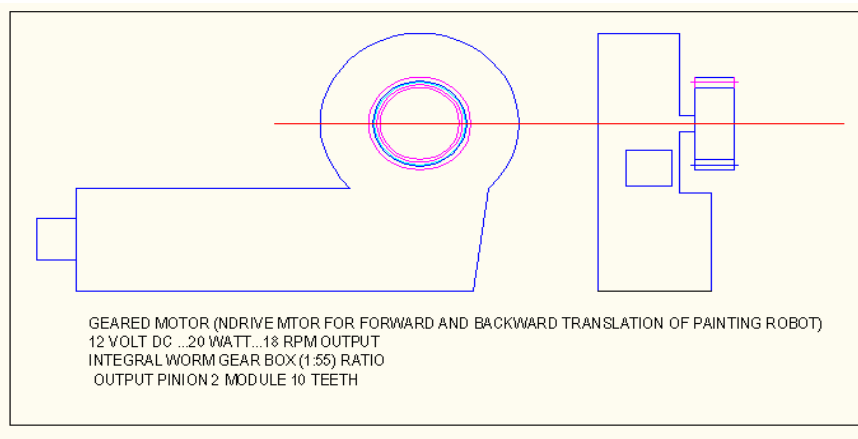


Fig 02 DC Motor

3.3_Design of Nut

In design of nut the major dimension is the height or length of the nut. It is decided by considering the bearing criterion

3.4 Design of Gear for Crank

No. of teeth on pinion =10

Module = 1.5mm

No. of teeth on gear =82

IV. RESULT AND DISCUSSION.

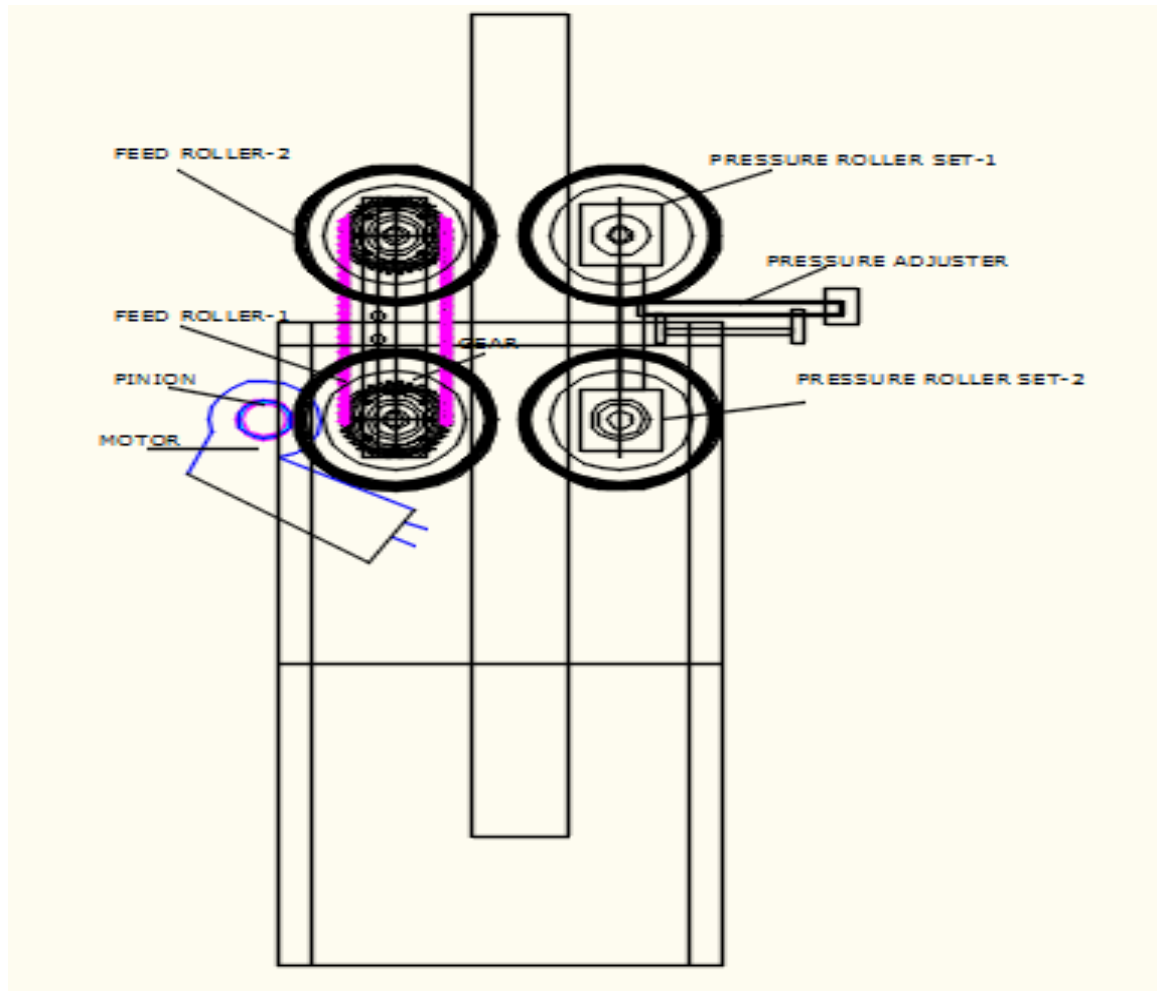


Fig.no.3.Working of bore well pipe lifter

In earlier we operate bore well pipe lifting mechanism manually. The mechanism was fixed. Set up time was more. Pulley and chain arrangement was used. Time consumed was more .Maintenance cost was more. Manpower was more. It requires more space. Now due to new modification it is easy to operate .Mechanism is portable. It consumes less time .Maintenance cost is low. It reduces manpower. It occupies less area.

4.1. 3D Model

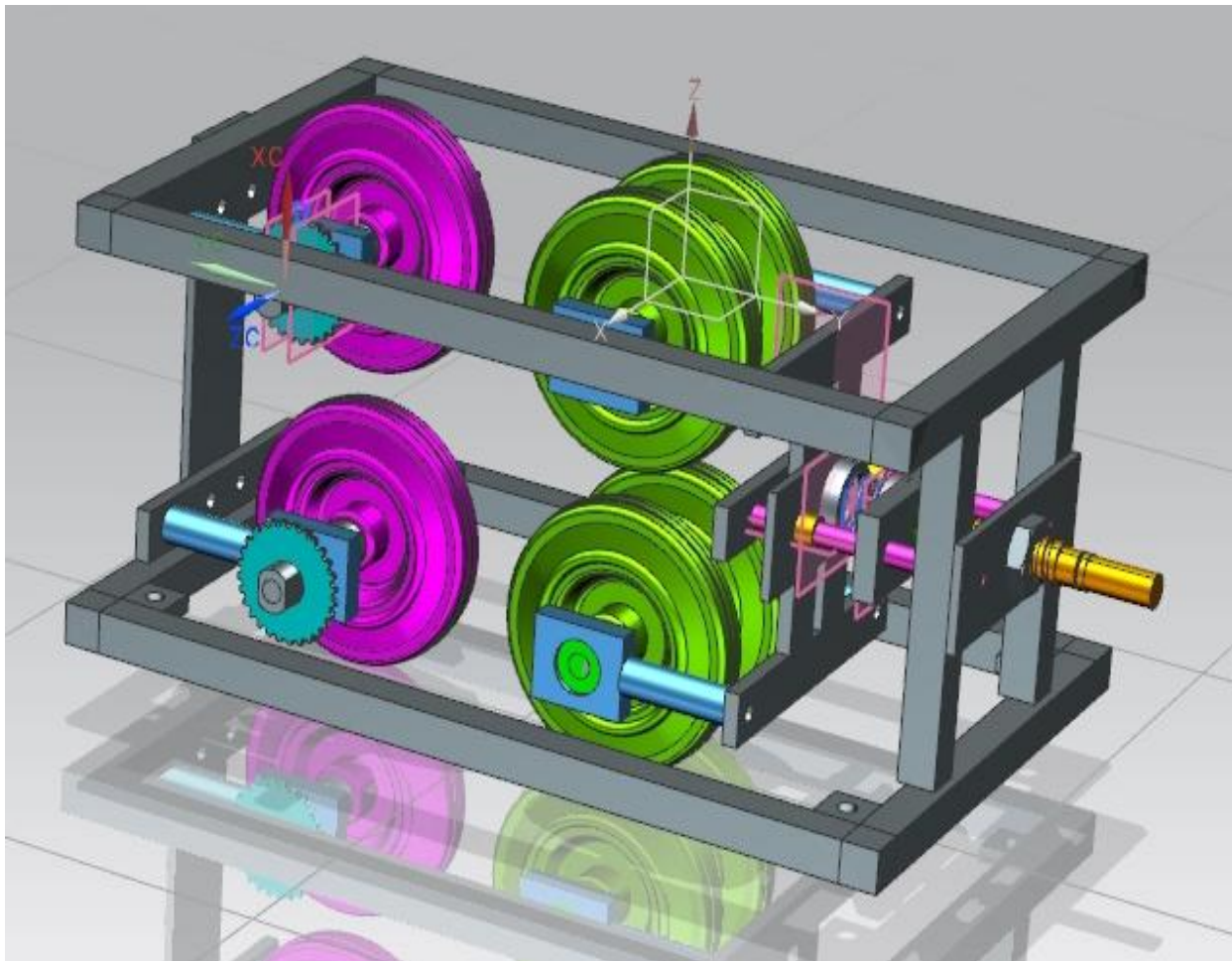


Fig. 04 3D Model of bore well pipe lifter

V. CONCLUSION

As per the above discussion we concluded that how overcome the problem in conventional bore well pipe lifting machine. Easy to lift pipe and motor by reducing human efforts and time with lower cost. Machine is also useful for lifting any object fall in the borewell. Future scope of proposed research work in automation.

REFERENCES

- [1]. Dr. C.N. Sakhale, D.M. Mate, Subhasis Saha, Tomar Dharmopal, Pranjit Kar, Arindam Sarkar, Rupam Choudhury, Shahil Kumar "An Approach to Design of Child Saver Machine For Child Trapped in Borehole" International Journal of Research in Mechanical Engineering, Volume 01, Issue 02 Dec 2015.
- [2]. S.Gopinath, T. Devika, L. Manivannan, Dr. N. Suthanthira Vanitha "Rescue Child from Bore well using Embedded System" International Research Journal of Engineering and Technology (IRJET) Volume: 02, Issue: 03, June-2015.



- [3]. A.Ramees, P.Pratheesh, G.Ajeesh krishnan, Akhil Sudhakaran, Rony.B.Chandran “Effective and Efficient Robotic System in Human Rescue Operation and War Field” IJIE-International Journal of Innovations & Implementations in Engineering Edition Volume 1, April 2015.
- [4]. E.Poorniya, S.Sumathi “Borewell Rescue Robot” International Journal of Computer Applications, Volume 113, No 14, March 2015.
- [5]. R. Shah Vrunda, Chirag S Dalal, Rajeev Dubey “Automate Machine for Rescue Operation For Child” International Journal Of Research in Engineering and Technology (IJRET), Volume 04, Issue 02, Feb 2015.
- [6]. K. Mohankumar, D. Venkatesan “Design Of Multifingered Rescue Hand Robot with Tele operation” International Journal Of Innovative Research in Science(IJIRSET), Engineering and Technology, Volume 4, Special Issue 6, May 2015.
- [7]. Manish Raj, P.Chakraborty, G.C.Nandi “Rescue Robotics in Bore well Environment” Indian Institute of Information Technology, Allahabad, Nov 2014