CHAIN SPANNER

A PROJECT REPORT

Submitted by

THIYANESHWAR ASHOKA N (927621BME066)
VETRIVEL S (927621BME067)
VIMALKUMAR R (927621BME070)

in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING

M. KUMARASAMY COLLEGE OF ENGINEERING, KARUR

ANNAUNIVERSITY: CHENNAI 600025

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BONAFIDE CERTIFICATE

Certified that this project report "**CHAIN SPANNER"** is the bonafide work of **"THIYANESHWAR ASHOKA N (927621BME066), VETRIVEL S (927621BME067), VIMAL KUMAR R (927621BME070)"** who carried out the project work during the academic year 2023 – 2024 under my supervision. Certified further, that to the best of my knowledge the work reported here in does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SIGNATURE
Dr. M. LOGANATHAN M.E., M.B.A., Ph.D.
HEAD OF THE DEPARTMENT

Department of Mechanical Engineering,
M. Kumarasamy College of Engineering,
Thalavapalayam, Karur - 639113.

SIGNATURE
Dr. L. EMMANUAL M.E., Ph.D.
SUPERVISOR
ASSISTANT PROFESSOR

Department of Mechanical Engineering,
M. Kumarasamy College of Engineering,
Thalavapalayam, Karur - 639113.

This project report has been submitted for the end semester project viva voce Examination held on _____

INTERNAL EXAMINER EXTERNAL EXAMINER

DECLARATION

We affirm that the Project titled **"CHAIN SPANNER"** being submitted in partial fulfillment off or the End Semester Examination of **B.E. MECHANICAL ENGINEERING**, is the original work carried out by us. It has not formed the part of any other project or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Student Name	Signature
1. THIYANESHWAR ASHOKA. N	----------
2. VETRIVEL. S	----------
3. VIMALKUMAR. R	----------

Name and signature of the supervisor with date

Dr. L. EMMANUAL

ASSISTANT PROFESSOR / MECH

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INSTITUTION VISION & MISSION

Vision

- To emerge as a leader among the top institutions in the field of technical education.

Mission

- Produces mart technocrats with empirical knowledge who can sur mount the global challenges.
- Create a diverse, fully-engaged, learner-centric campus environment to provide quality education to the students.
- Maintain mutually beneficial partnerships with our alumni, industry and professional associations.

DEPARTMENT VISION, MISSION, PEO, PO & PSO

Vision

- To create globally recognized competent Mechanical engineers to work in multi-cultural environment.

Mission

- To impart quality education in the field of mechanical engineering and to enhance their skills, to pursue careers or enter into higher education in their area-of-interest.
- To establish a learner-centric atmosphere along with state-of-the-art research facility.
- To make collaboration with industries, distinguished research institution and to become a center of excellence

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

The graduates of Mechanical Engineering will be able to

- PEO1: Graduates of the program will accommodate insightful information of engineering principles necessary for the applications of engineering.
- PEO2: Graduates of the program will acquire knowledge of recent trends in technology and solve problem in industry.
- PEO3: Graduates of the program will have practical experience and interpersonal skills to work both in local and international environments.
- PEO4: Graduates of the program will possess creative professionalism, understand their ethical responsibility and committed towards society.

PROGRAM OUTCOMES

The following are the Program Outcomes of Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / Development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life - long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life -long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

The following are the Program Specific Outcomes of Engineering Graduates:

The students will demonstrate the abilities

1. **Real world application:** To comprehend, analyze, design and develop innovative products and provide solutions for the real-life problems.
2. **Multi-disciplinary areas:** To work collaboratively on multi-disciplinary areas and make quality projects.
3. **Research oriented innovative ideas and methods:** To adopt modern tools, mathematical, scientific and engineering fundamentals required to solve industrial and societal problems.

Course Outcomes	At the end of this course, learners will be able to:	**Knowledge Level**
CO - 1	Identify the issues and challenges related to industry, society and environment.	Apply
CO - 2	Describe the identified problem and formulate the possible solutions.	Apply
CO -3	Design / Fabricate new experimental set up/devices to provide solutions for the identified problems	Analyse
CO -4	Prepare a detailed report describing the project outcome	Apply
CO - 5	Communicate outcome of the project and defend by making an effective oral presentation.	Apply

MAPPING OF PO & PSO WITH THE PROJECT OUTCOME

Course Outcomes	**Program Outcomes**												**Program Specific Outcomes**		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO - 1	3	3	3	3	2	2	2	2	3	3	2	2	3	2	3
CO - 2	3	3	3	3	2	2	2	2	3	3	2	2	3	2	3
CO - 3	3	3	3	3	2	2	2	2	3	3	2	2	3	2	3
CO - 4	3	3	3	3	2	2	2	2	3	3	2	2	3	2	3
CO - 5	3	3	3	3	2	2	2	2	3	3	2	2	3	2	3

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ABSTRACT

The "Chain Spanner" project presents a comprehensive solution for the efficient and secure management of blockchain networks. Addressing the complexities and scalability challenges inherent in decentralized systems, Chain Spanner offers a modular platform equipped with advanced algorithms and intuitive interfaces. Key features include real-time network monitoring, automated error detection, proactive security measures, and dynamic resource allocation. By empowering administrators with actionable insights and automated management capabilities, Chain Spanner aims to enhance the scalability, reliability, and security of blockchain networks, thus accelerating their adoption and fostering digital transformation across industries.

CHAPTER -1

1. INTRODUCTION

This project tackles the challenge of removing stubborn nuts and bolts, especially from objects with smooth or oddly shaped surfaces, where traditional wrenches might slip. We'll be building a handy homemade strap wrench using a chain and bolt. This simple tool offers an adjustable solution for gripping and turning various fasteners, making it a valuable addition to any toolbox. This project tackles the challenge of removing stubborn nuts and bolts, especially from objects with smooth or oddly shaped surfaces, where traditional wrenches might slip. We'll be building a handy homemade strap wrench using a chain and bolt. This simple tool offers an adjustable solution for gripping and turning various fasteners, making it a valuable addition to any toolbox.

1.1 DESCRIPTION

The project focuses on the design, development, and implementation of a Chain Spanner. This innovative system aims to enhance user convenience by providing a mechanism for removing the stubborn nuts and bolts in vehicles or anywhere for a particular size. The report covers various aspects of the project, including the motivation, objectives, methodology, and the final outcomes.

1.2 PROBLEM STATEMENT

The existing problem in Spanner is there are various size and no. of spanner is more. Time is so consumed to check which size spanner is suitable for the bolts and nuts for removing or tightening it. And another is there is excess no of chain linked with it, so it will be quiet dangerous and not able to hold the remaining chains in hand.

1.3 OBJECTIVES

The aim and objective of this project is to encompass various aspects, aiming to address existing challenges and enhance the overall user experience. This invention is mostly useful for all the workers and so on. This involves various things like Convenience Enhancement, User Friendly Operation, Safety Integration, Energy Efficiency, Durability and Reliability, Cost Effectiveness.

CHAPTER 2

2. PROJECT METHODOLOGY

2.1 EXISTING PROBLEM

The existing problem in Spanner is there are various size and no of spanner is more. Time consumed is so much to check which size spanner is suitable for the bolts and nuts for removing or tightening it. And another is there is excess no of chain linked with it, so it will be quiet dangerous and not able to hold the remaining chains in hand.

2.2 PROPOSED SOLUTION

The proposed solution to address the existing problem of no of spanner and linked of chains are higher is the implementation of a Chain Spanner. This innovative system aims to reduce the no. of spanners, providing a more convenient and user-friendly experience for workers and so on.

CHAPTER 3

CONSTRUCTION AND WORKING

3.1 CONSTRUCTION

The construction of the Chain Spanner centers around the utilization of a Linked Chain, Jaws and Screw Mechanism and a pipe.

Linked Chain: A chain spanner utilizes a metal chain made of interlocking links designed to fit around various object diameters.

Jaws: The chain connects to two jaws at each end. These jaws can be fixed or adjustable depending on the design.

Screw Mechanism: An adjustment screw is threaded through one of the jaws and connects to a pressure pad or another jaw.

3.2 WORKING

The Chain Spanner operates with a focus on simplicity and efficiency.

Placement: The chain is looped around the object (pipe or nut) you want to grip.

Adjustment: The screw mechanism is turned, tightening the chain around the object. As the screw tightens, the pressure pad or opposing jaw pushes the chain inwards, creating a secure grip on the object.

Turning: Once secure, the entire spanner is turned, applying torque to loosen or tighten the nut or bolt.

3.3 ADVANTAGES

- Convenience and Accessibility
- User-Friendly Operation
- Safety Features
- Energy Efficiency
- Durability and Reliability
- Enhanced User Experience
- Cost-Effectiveness

3.4 DISADVANTAGES

- Complexity of Repair
- Dependency on Power
- Limited Control

CHAPTER-4

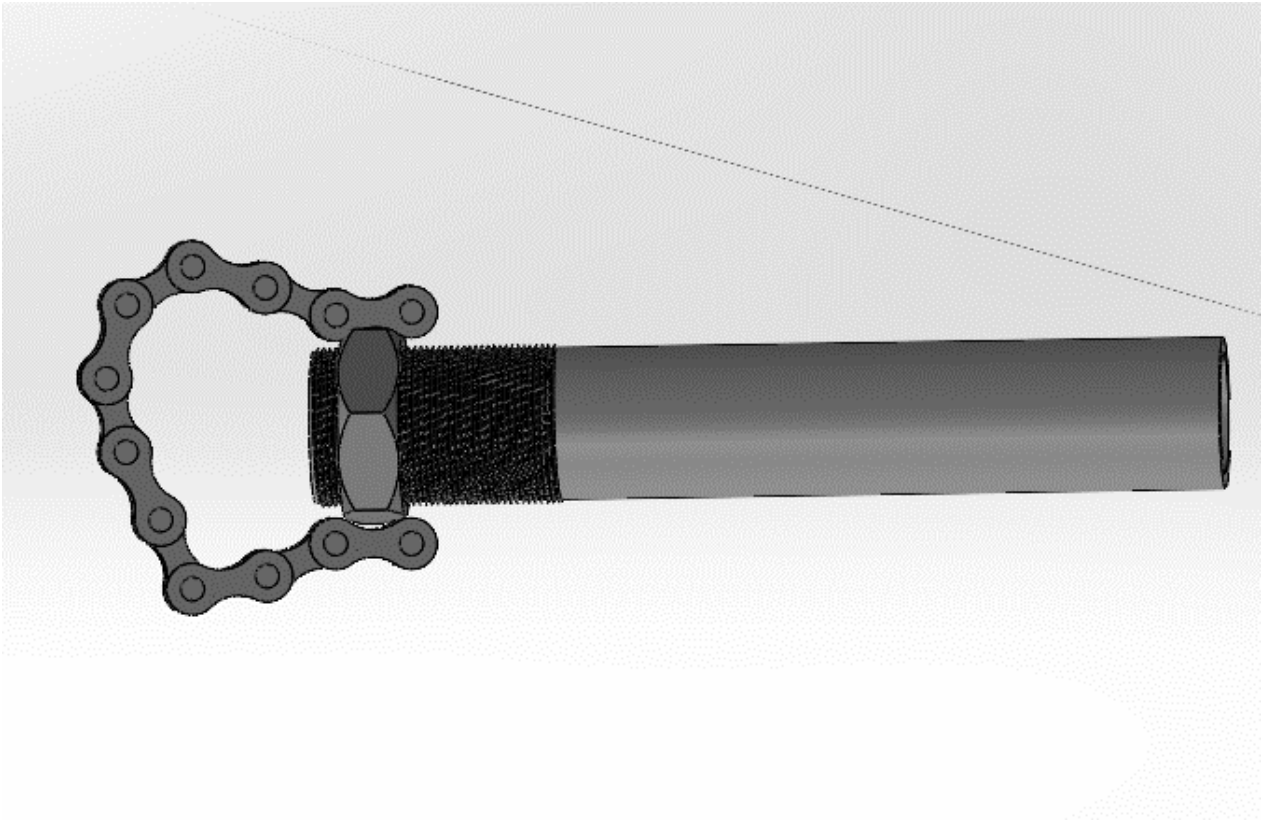
4. SYSTEM SPECIFICATION

4.1 HARDWARE SPECIFICATION

- ❖ Pipe with thread
- ❖ Nut
- ❖ Linked Chain

CHAPTER 5

DATA FLOW DIAGRAM



CHAPTER 6

RESULT AND DISCUSSIONS

The reults obtained were found to be satisfactory and the accuracy was measured up to 85%. It completely meets the objectives and requirements of the system. The framework has achieved an unfaltering state where all the bugs have been disposed. It completely avoid the usage of n number of spanners.

CHAPTER 7

CONCLUSION

In conclusion, the integration of a chain spanner utilizing a pipe with chain enhances user convenience and ergonomic design. This innovative system not only simplifies the process of accessing the storage compartment but also contributes to a smoother and more user-friendly experience. The efficiency and reliability of the chain spanner make it a valuable addition to spanner design, emphasizing practicality and user comfort in urban mobility solutions.

ISOMETRIC VIEWS