



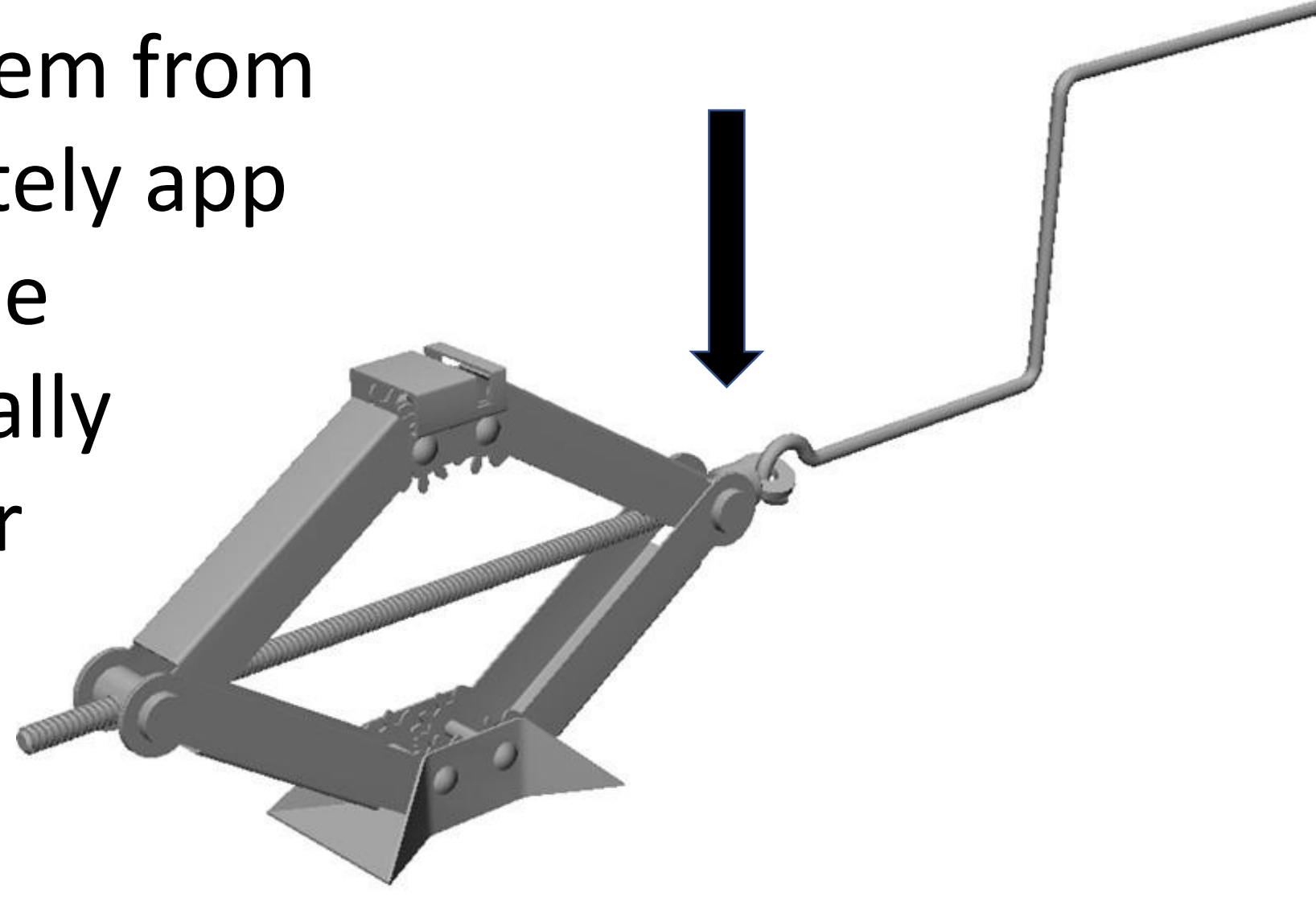
Android Based Advanced Car Jack System

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Problem Statement

Improvising the existing car jack system from the manual and hydraulic to completely app controlled automatic jack system. The problem of operating the jack manually has been solved using reduction gear box, mobile application, Bluetooth module, DC motor, electronic circuit and micro controller.

Existing Car Jack System



Introduction

Basically most of the people face problem in fitting the jack to their car while changing the tires or for under chassis work. Improper fitting of jack can lead to structure deformation of car. If the jack is not properly fixed to the car, there are possible chances that the car can fall over the person while he is working under the chassis. So, we are automating the jack system by controlling it through an app.

Mobile App

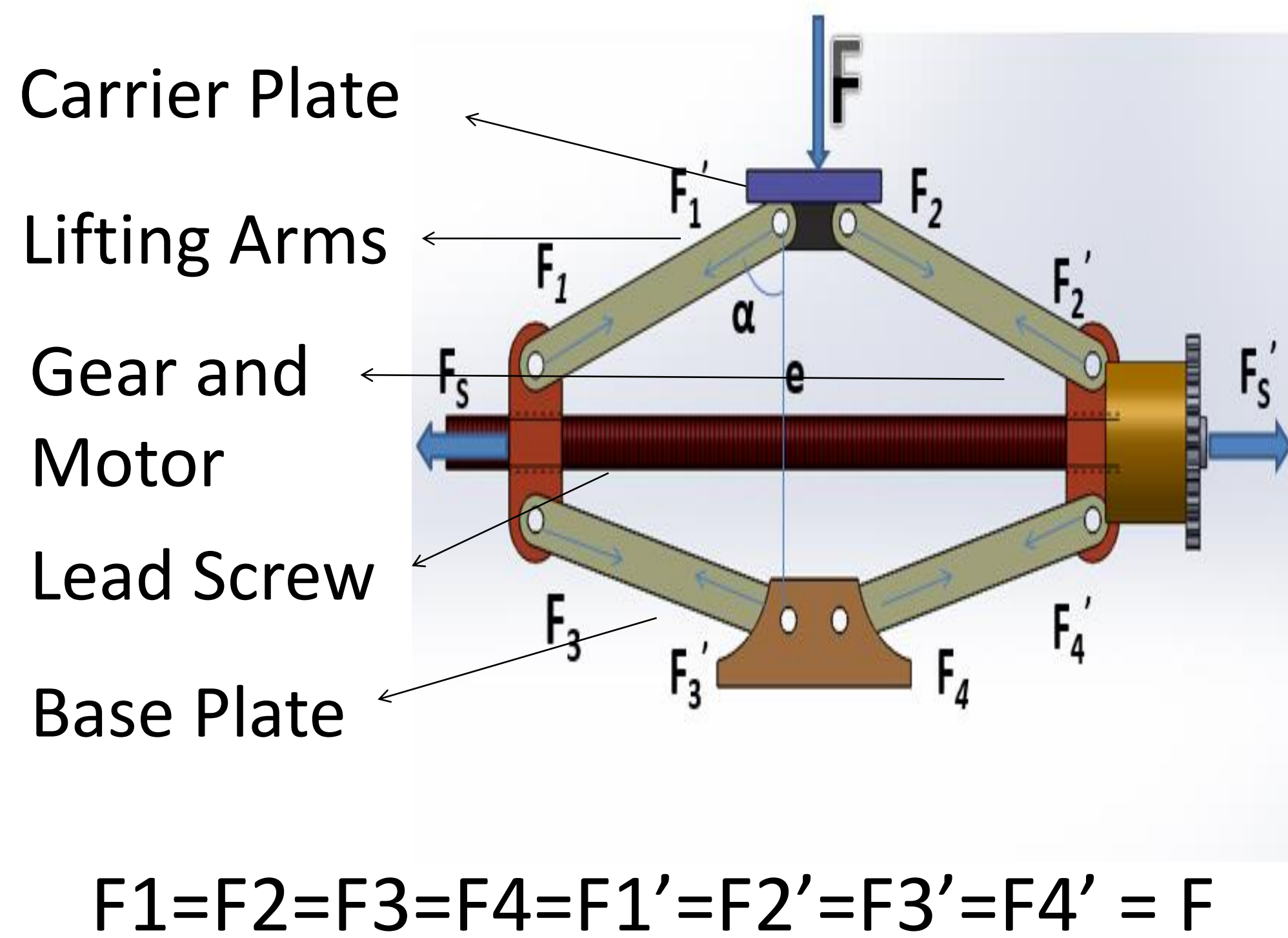
Bluetooth Module

Arduino

DC Motor Gear Box

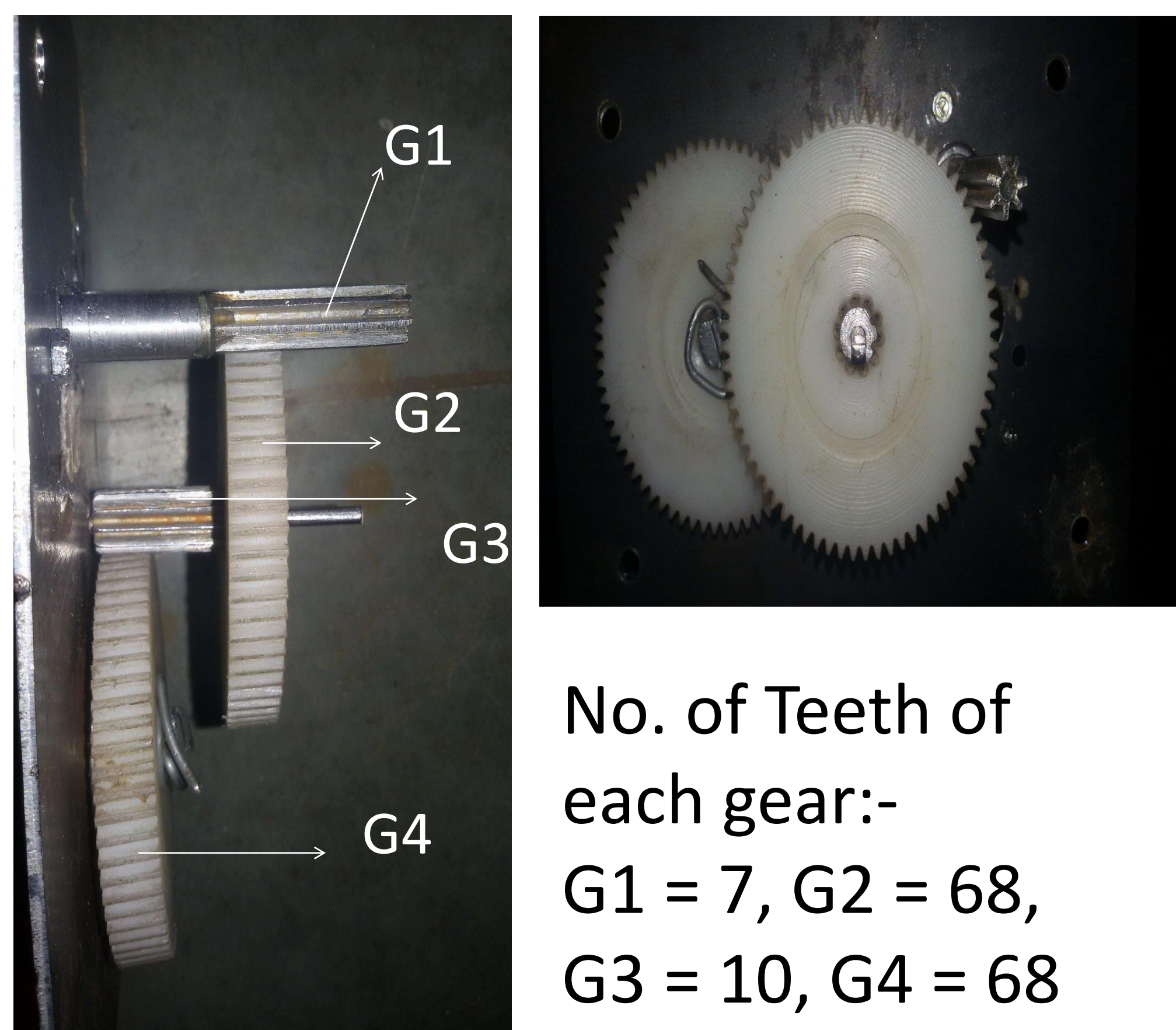
Lead Screw

Jack Movement



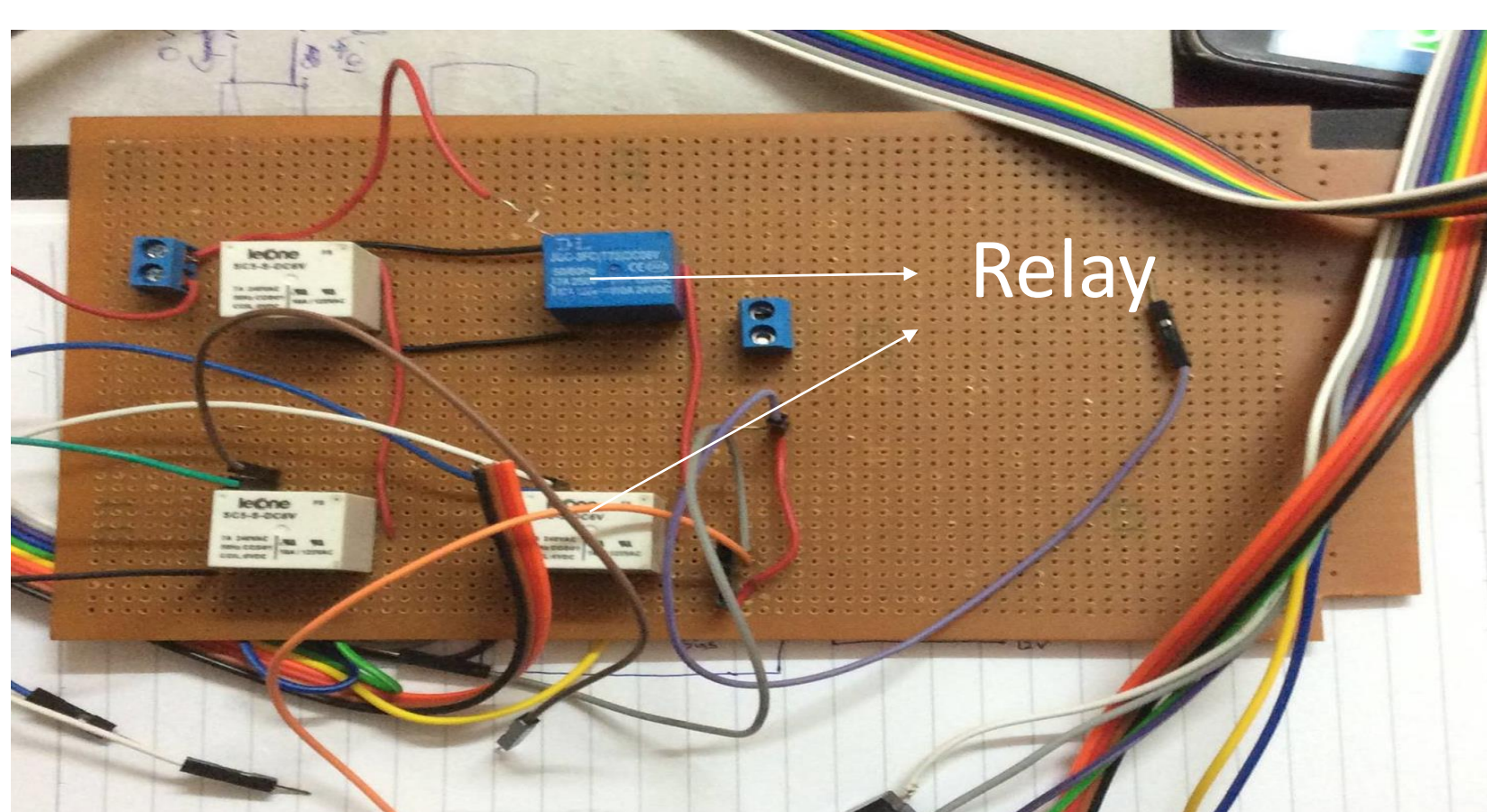
$$F_1 = F_2 = F_3 = F_4 = F_1' = F_2' = F_3' = F_4' = F$$

Cad Model



No. of Teeth of each gear:-
G1 = 7, G2 = 68,
G3 = 10, G4 = 68

Gear Box



5V, 2amp(Single Pole Single Throw)

Electronic Circuit

The extreme positions of the jack are controlled by the electronic circuit which is implemented using relays and switches.

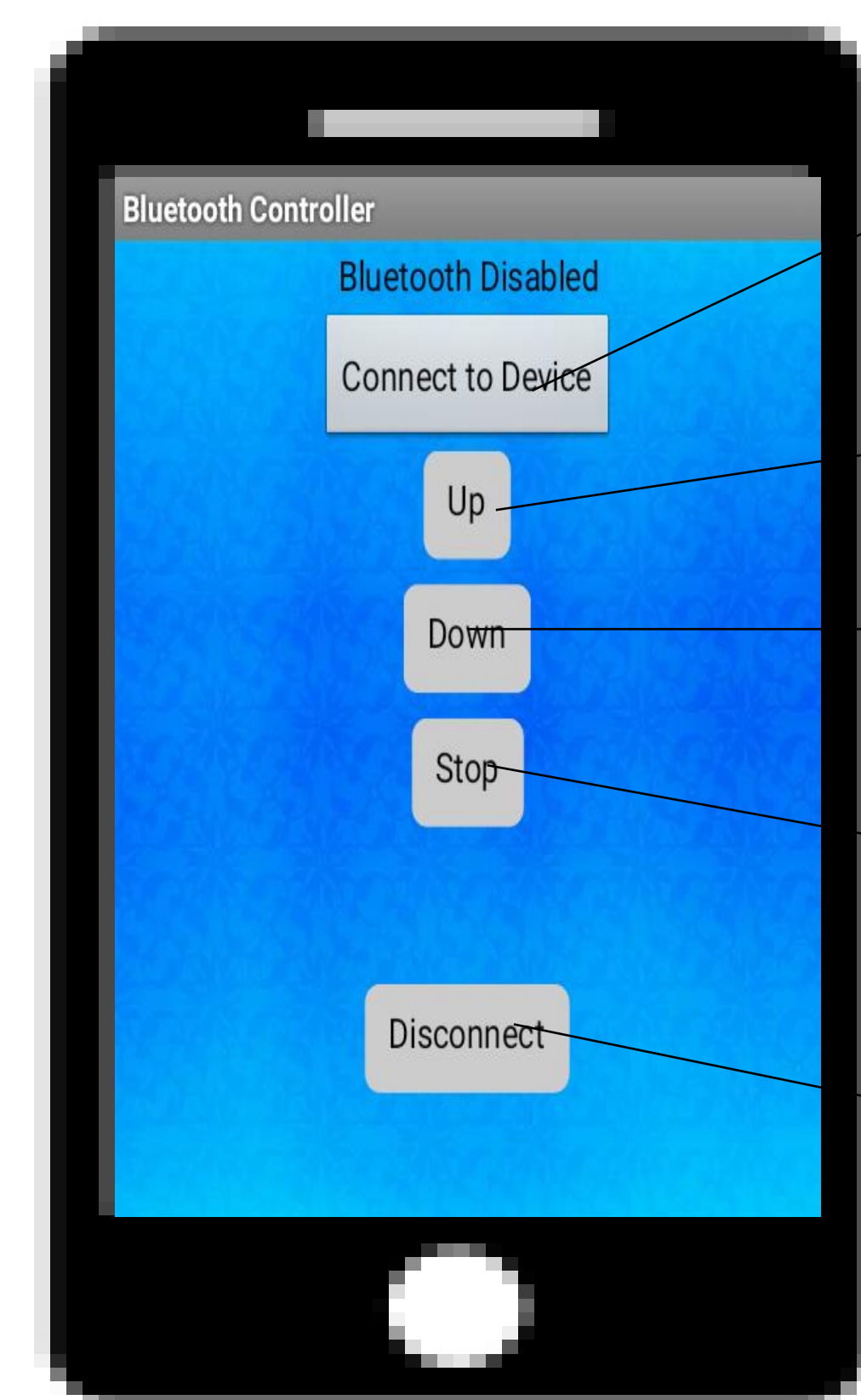
Directions of Use

Switch on the Bluetooth and open the App.

Press the 'Connect to Device' button in the App.

Press 'UP', 'DOWN', 'STOP' as desired.

Disconnect the device after use.



Connect to Device

UP

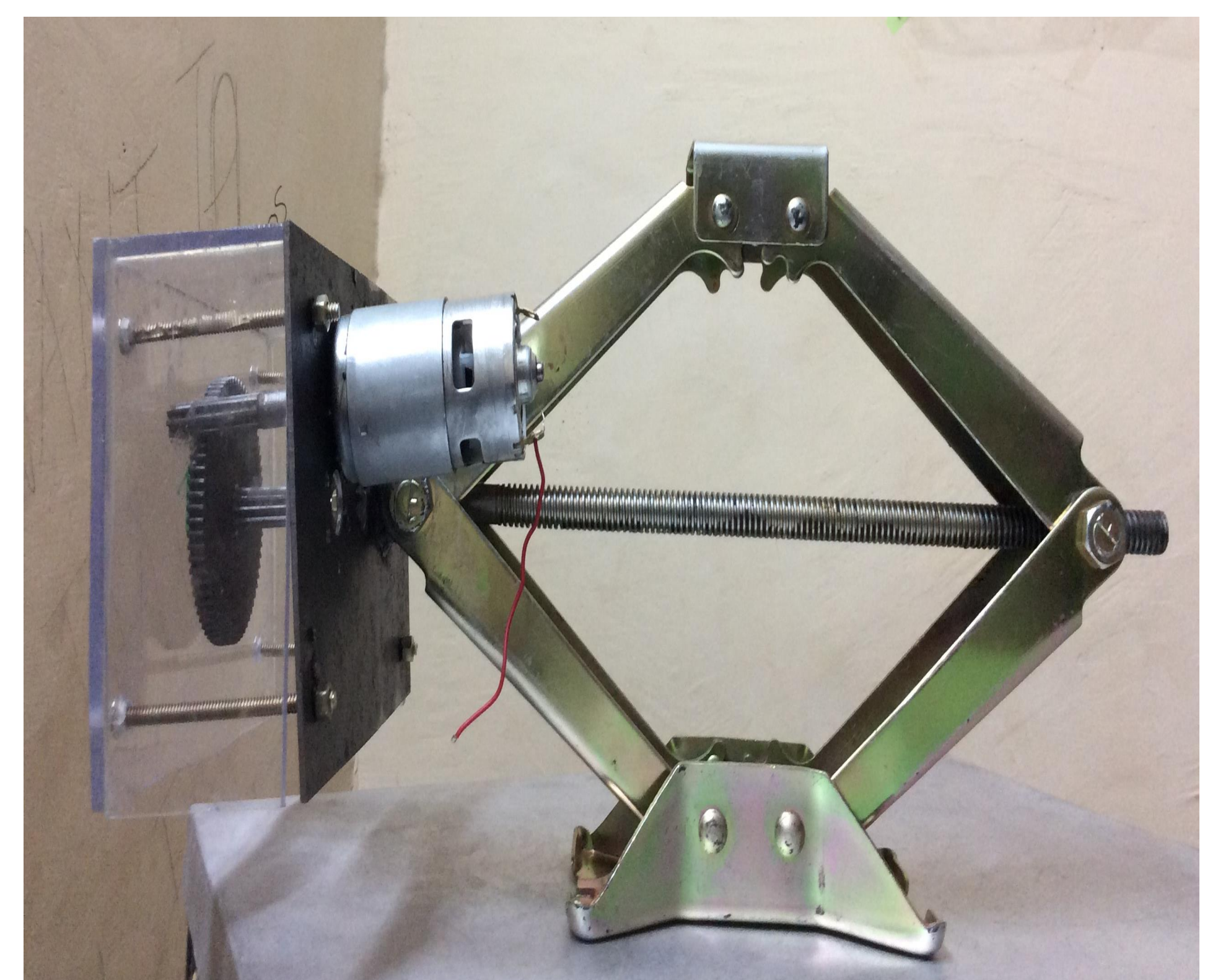
DOWN

STOP

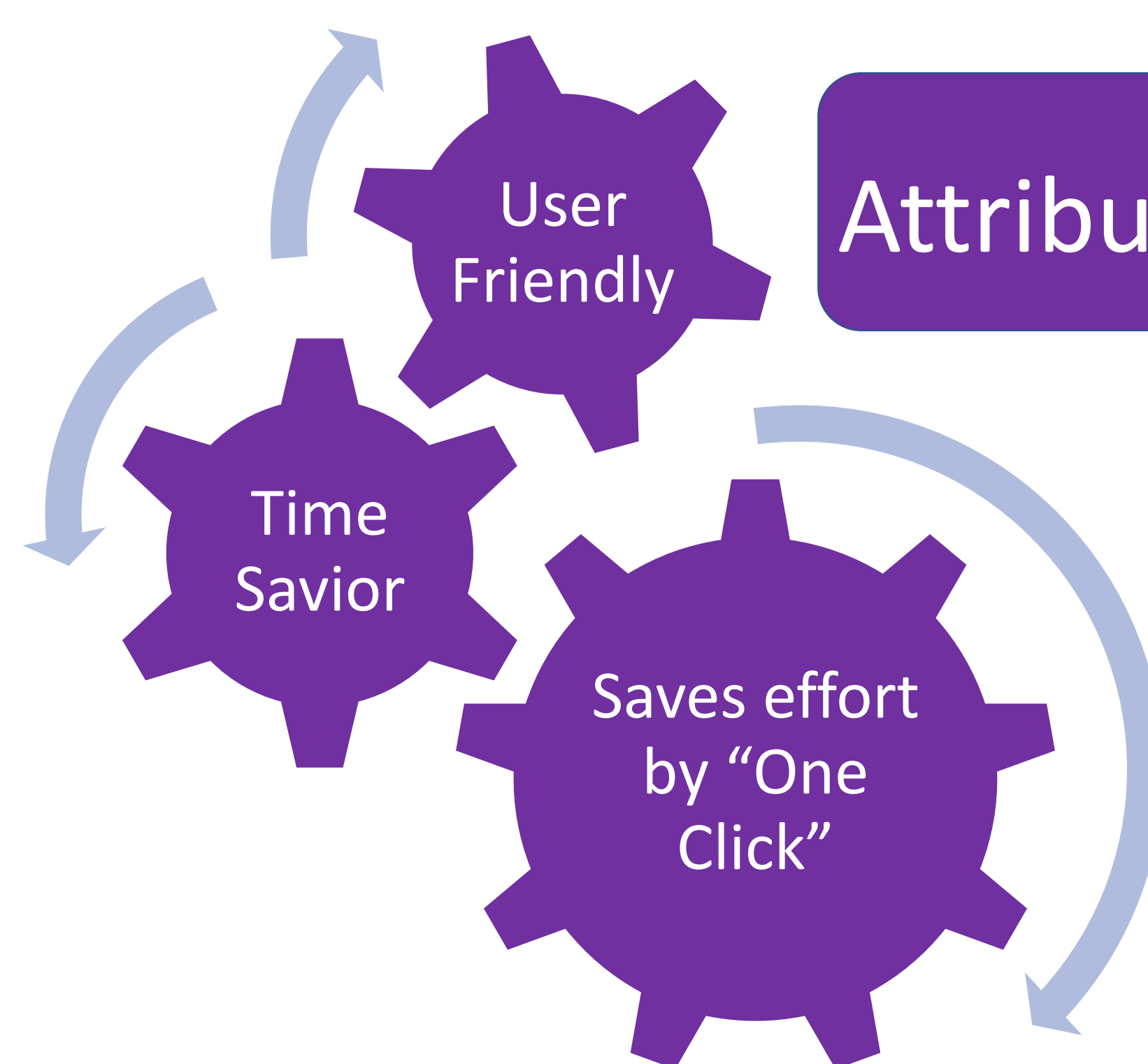
Disconnect

Jack Controller App

Actual Product



Attributes



Conclusion

The product is highly reliable and has reduced the accidents due to the improper fitting of the jack. The device has been tested and is working efficiently.

References

1. Manoj Patil, Gaurav Udgirkar, Rajesh Patil and Nilesh "Automated Car Jack", International Journal of Current Engineering and Technology E-ISSN 2277 4106.

Future Advancements

The automatic jack system should be pre-installed in the car. Further, hydraulic jacks can be automated by this procedure. Also we can attach Nylon wheels adjacent to the tyres so that if it punctures Nylon tyres can act as spare tyres.