

Design Thinking Project Report on

ELECTRO MECHANICAL CHARGER

[EMC]

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Abstract

Nowadays, all are using "Power Banks" [It is an electronic gadget that is used when the mobile has low charging]. If the power bank charging also dead ,it is useless. If we are in such an area that has lack of electricity such as forest areas, Mountain climbing etc., the power banks will only useful for certain period of time. After the power bank is dead , there is no alternative sources of getting charge for the mobile in emergency situations. The power banks are only useful if it has a power. If there is no availability of electricity then the power bank is burden to us. So, that's why we are introducing "**ELECTRO MECHANICAL CHARGER**". It is an electronic gadget that is useful when there is no electricity available. It is useful to charge "Power Bank" mechanically when power bank energy is fully consumed. We are going to use "MOTOR-GENERATOR -PRINCIPLE ". Electrical Energy converts into Mechanical Energy. Mechanical Energy converts into Electrical Energy. We can charge the power bank by using the natural resources which are Eco-friendly. We can charge our mobile in four ways: Wind Energy [Propeller], Mechanical Rotator, By Charging, By Tidal Energy

LIST OF FIGURES

S. No	Fig. No	Title of Figure	Page. No
1	2.1	Material used	4
2	3.1	Architectural Design	05
3	3.2	Discharged Battery	05
4	3.3	Natural Energy Sources	06
5	3.4	Natural Energy Sources utilizing	06
6	3.5	Storing Process	07
7	3.6	Utilizing Stried Energy	07
8	4.1	Output image of prototype structure	08
9	5.1	Output image 1 of external structure	09
10	5.2	Output image 2 of external structure	09
11	5.3	Output image 3 of internal structure	10
12	5.4	Output image 4 of internal structure	11

INDEX

Abstract	i
List of Figures	ii
1.INTRODUCTION	1
1.1 Scope	1
1.2 Existing System	2
1.3 Proposed System	3
2.SYSTEM ANALYSIS	4
2.2 Hardware Requirements	4
3.SYSTEM DESIGN	5
3.1 Architecture Design	5
3.2 Modules	6
4.SYSTEM IMPLEMENTATION	7
5.OUTPUT SCREENS	8
6.CONCLUSION AND FUTURE SCOPE	9
7.BIBLIOGRAPHY	10

CHAPTER-1

INTRODUCTION

1.1 SCOPE

In our world technology is improving and reducing human effort. Specifically electronic gadgets playing a vital role in human life. Make things easy to humans. My project is also an electronic gadget based on hardware prototype. Now a days all are using mobile phones for communications, capturing events and so on. All of us get in tense situation when battery is low. To remove that tense situations some company was introduced the power bank concept. Power Bank is an electronic gadget that is used when Phone battery is dead. Here the disadvantage of the power bank it serves limit amount of time only after that it has to be get charged. To overcome this draw back we are designed a Hardware Prototype Electronic gadget called EMC[ELECTRO MECHANICAL CHARGER].

1.2 Existing System

The purpose of a power bank is to recharge battery-powered electronics when you're on-the-go! A power bank can be small enough to fit in your pocket or they can be larger with a higher capacity. Power banks are used to charge cell phones, tablets, speakers, and even laptops!

Drawbacks of Existing System

- Many power banks are heavy or costly.
- It is not longer useful if the charge is low.
- They must be charged as soon as their battery is low. If they are lower, they will drain faster.
- In some cases, they can also affect the battery of your phone.

1.2 Proposed System

EMC POWER BANK

Nowadays, all are using "Power Banks" [It is an electronic gadget that is used when the mobile has low charging]. If the power bank charging also dead, it is useless. If we are in such an area that has lack of electricity such as forest areas, Mountain climbing etc., the power banks will only be useful for a certain period of time. After the power bank is dead, there is no alternative source of getting charge for the mobile in emergency situations. The power banks are only useful if they have power. If there is no availability of electricity then the power bank is a burden to us. So, that's why we are introducing "**ELECTRO MECHANICAL CHARGER**".

It is an electronic gadget that is useful when there is no electricity available. It is useful to charge "Power Bank" mechanically when power bank energy is fully consumed. We are going to use "MOTOR-GENERATOR - PRINCIPLE".

- MOTOR:
 - Electrical Energy converts into Mechanical Energy.
- GENERATOR:
 - Mechanical Energy converts into Electrical Energy.

We can charge the power bank by using the natural resources which are Eco-friendly. We can charge our mobile in four ways:

1. Wind Energy [Propeller]
2. Mechanical Rotator
3. By Charging
4. By Tidal Energy

- It is an Electronic gadget that is useful when there is no electricity available.
- It is useful to charge "Power Bank" mechanically when power bank energy is fully consumed.
- We are going to use "MOTOR-GENERATOR PRINCIPLE".
- MOTOR:
 - > Electrical Energy converts into Mechanical Energy.
- GENERATOR:
 - > Mechanical Energy converts into Electrical Energy.
- We can charge the power bank by using the natural resources which are Eco-friendly.

SYSTEM ANALYSIS

2.1 HARDWARE REQUIREMENTS

1. Dc Motor(1)
2. LED(1)
3. Charging port(1)
4. Rotator
5. Multi Meter
6. Wires



FIG.NO 2.1 [Material used]

CHAPTER-3

SYSTEM DESIGN

3.1 ARCHITECTURE DESIGN

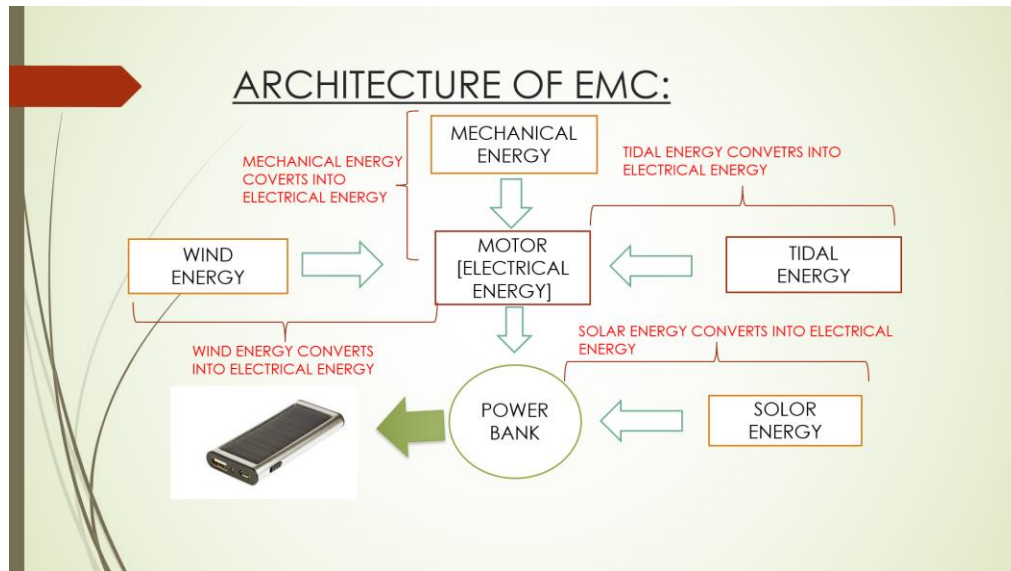


FIG.NO 3.1 [ARCHITECTURAL DESIGN]

3.2 MODULES

MODULE-1 [DISCHARGED BATTERY]

Whenever a load is connected to the battery, it draws current from the battery, resulting in battery discharge. Battery discharge could be understood to be a phenomenon in which the battery gets depleted of its charge. Greater the current drawn by the load, faster the battery discharges.

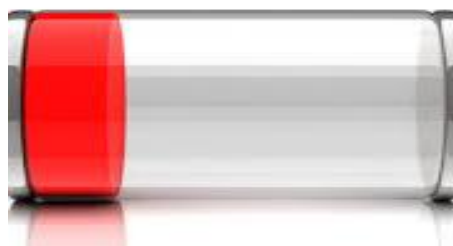


FIG.NO 3.2 [DISCHARGED BATTERY]

MODULE-2 [NATURAL ENERGY SOURCES]

Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.



FIG.NO 3.3 [NATURAL ENERGY SOURCES]

MODULE-3 [CONCEPTS OF UTILIZING ENERGY SOURCES]

1. Mechanical energy converts into Electrical Energy.
2. Tidal Energy converting into electrical Energy.
3. Wind Energy converting into Electrical Energy.
4. Heat Energy converting into Electrical Energy.

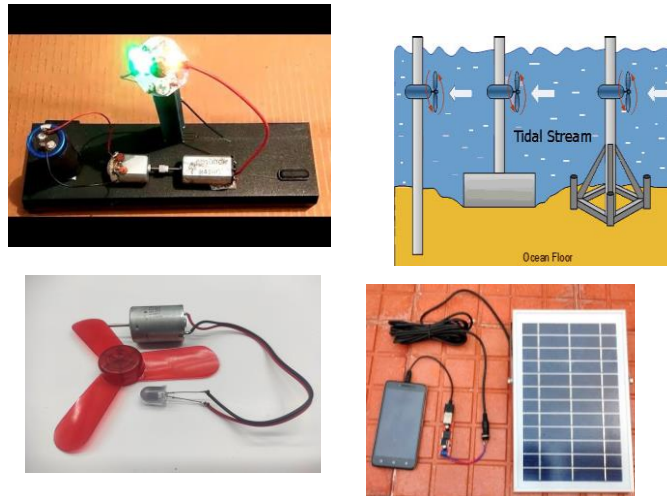


FIG.NO 3.4 [NATURAL ENERGY SOURCES UTILIZING]

MODULE-4 [STORING THE ENERGY IN POWER BANK]

The Electrical Energy which is generated by the Motor/Solar panel are stored in the power bank with the help of usb cable charger.

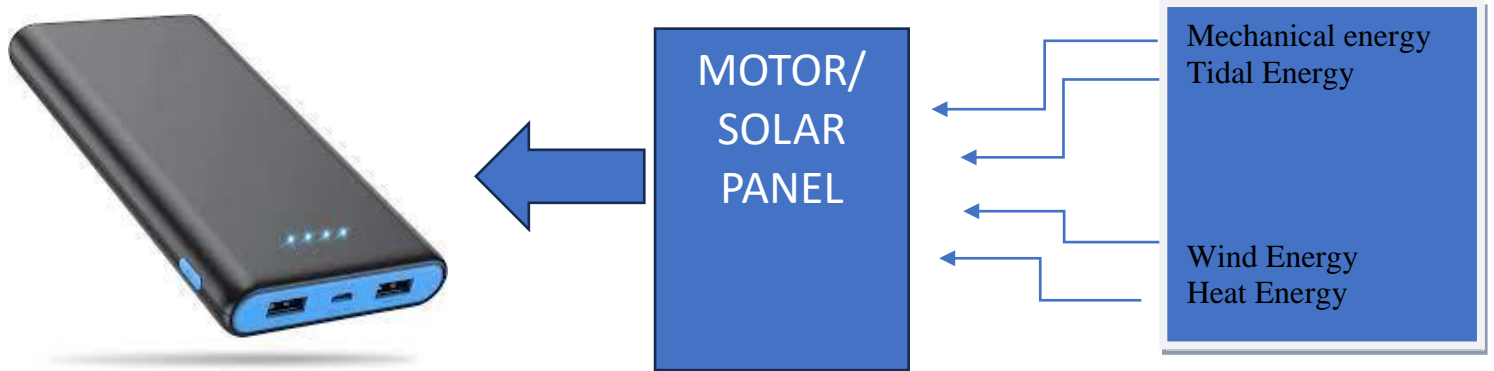


FIG 3.5 [STORING PROCESS]

MODULE-5 [UTILIZING THE STORED ENERGY]

After battery getting fully charged then use that for our requirements.

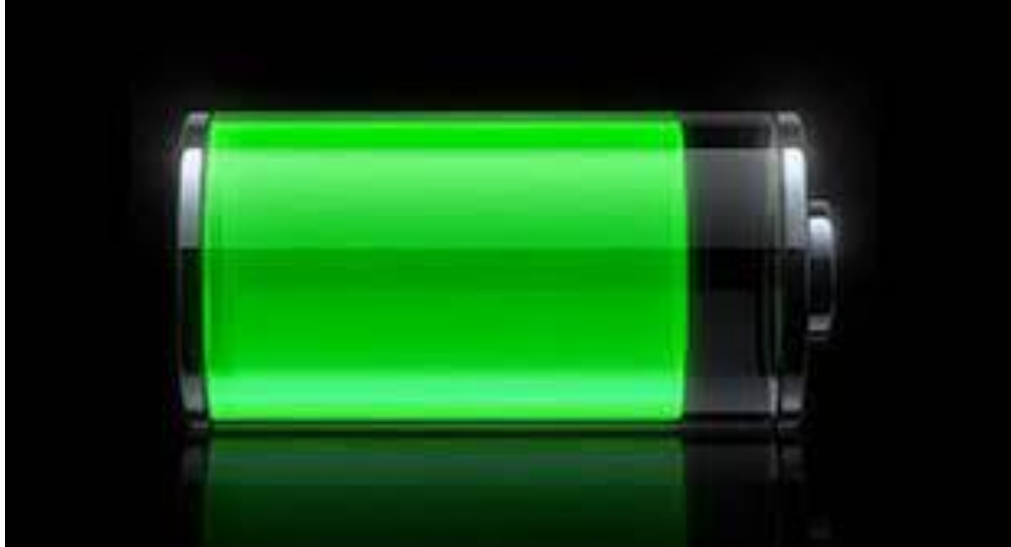


FIG 3.6 [UTILIZING STORED ENERGY]

CHAPTER-4

SYSTEM IMPLEMENTATION

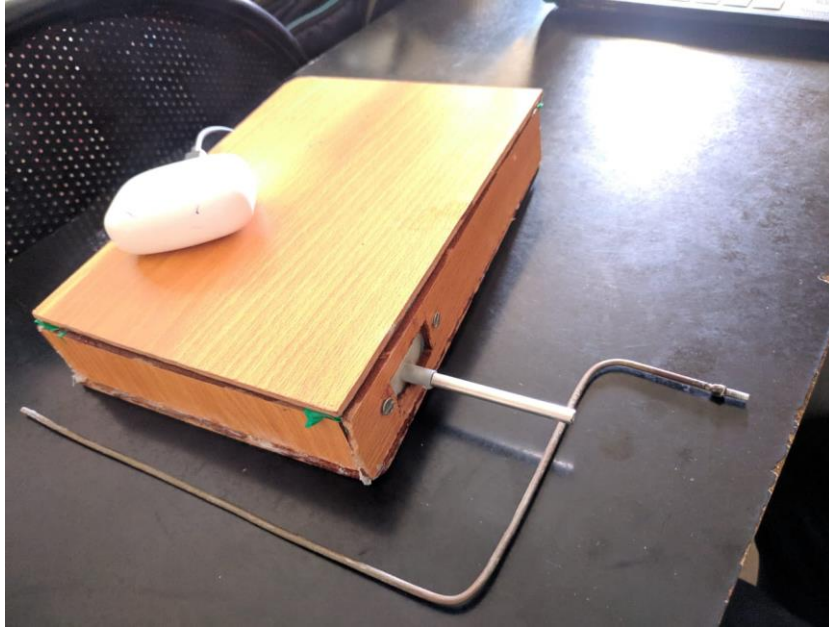
EMC hardware prototype is implemented power bank structure that is in rectangular shape. We are used a DC Motor for electricity generator. The body of the EMC is made up of wooden board in rectangular shape. In that body we fixed dc motor and the terminals which are generating electricity is connected to the LED and Charger pin. The shaft is fixed with mechanical rod which is designed to rotate the shaft of the motor. If we rotate the shaft mechanically the DC Motor is works as a generator and produces output electricity through terminals. The produced electricity is transferred to LED and Charger that leads to glowing LED and Charge the Phone.



OUTPUT IMAGE-4.1 [PROTOTYPE STRUCTURE]

CHAPTER-5

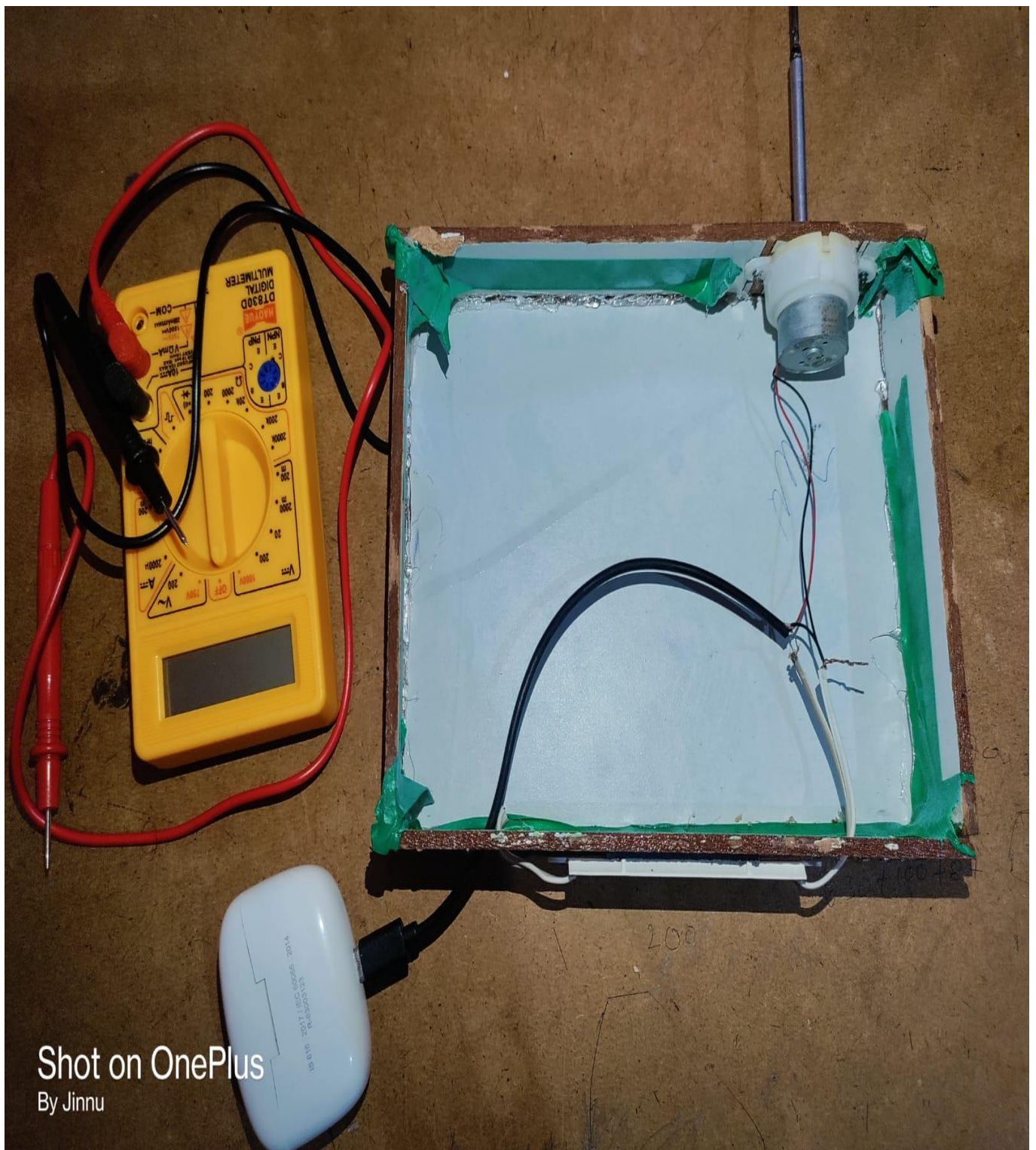
OUTPUT SCREENS



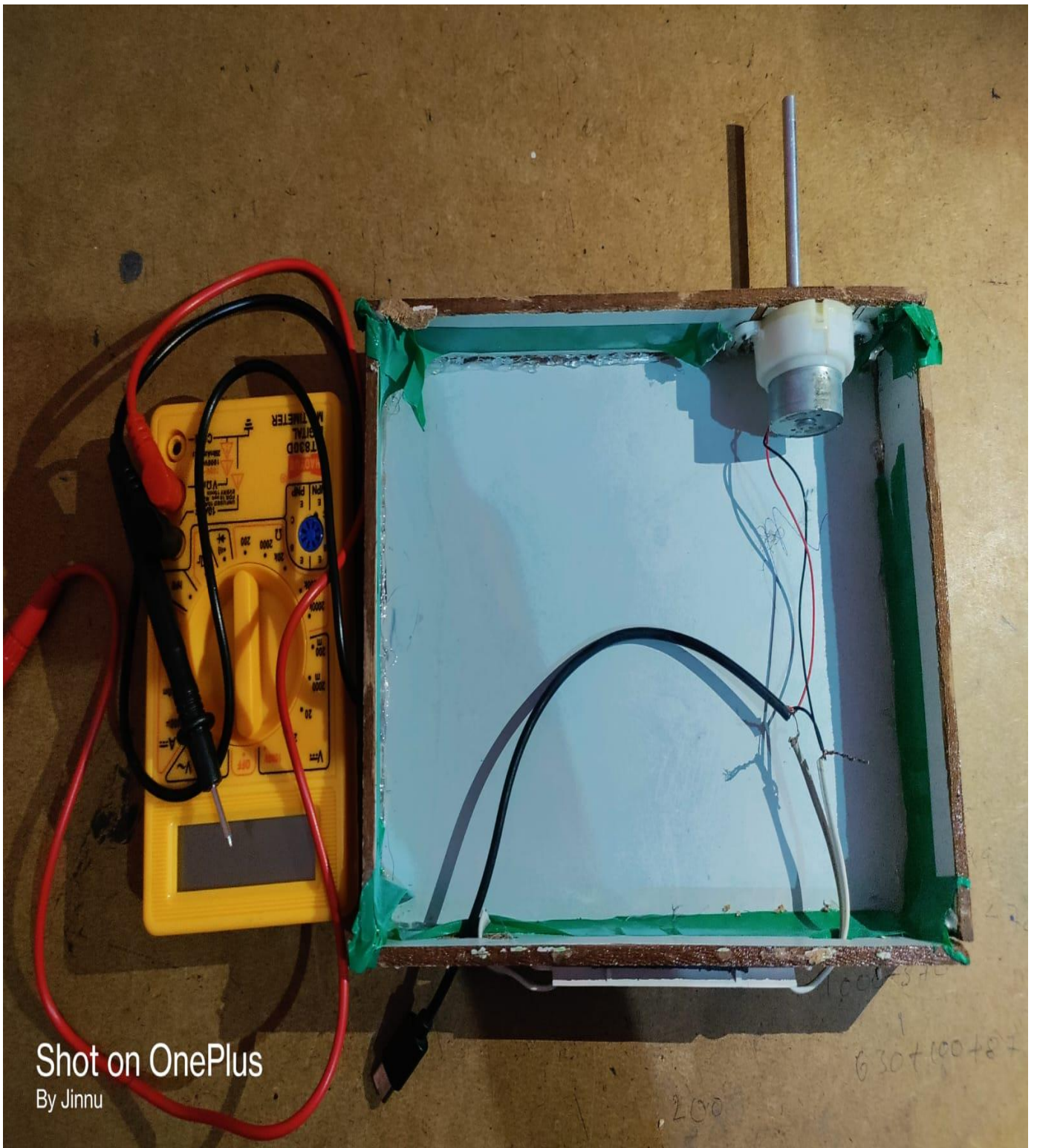
OUTPUT IMAGE-5.1 [EXTERNAL STRUCTURE]



OUTPUT IMAGE-5.2 [EXTERNAL STRUCTURE]



OUTPUT IMAGE-5.3 [INTERNAL STRUCTURE]



OUTPUT IMAGE-5.4 [INTERNAL STRUCTURE]

CHAPTER-5

CONCLUSION AND FUTURE SCOPE

EMC charger will play a good role in emergency situations. The Energy that is created by rotating motor can be helpful in our daily life especially when there is no availability of electricity. In extension of this we can add solar panels to the power bank that is stored in separate battery plays important role. Nowadays, all are using "Power Banks" [It is an electronic gadget that is used when the mobile has low charging]. If the power bank charging also dead ,it is useless. If we are in such an area that has lack of electricity such as forest areas, Mountain climbing etc., the power banks will only useful for certain period of time. After the power bank is dead , there is no alternative sources of getting charge for the mobile in emergency situations. The power banks are only useful if it has a power. If there is no availability of electricity then the power bank is burden to us. So, that's why we are introducing "**ELECTRO MECHANICAL CHARGER**". It is an Electronic gadget that is useful when there is no electricity available. It is useful to charge "Power Bank" mechanically when power bank energy is fully consumed.

CHAPTER-6

BIBLIOGRAPHY

1. https://en.wikipedia.org/wiki/DC_motor