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Coin Based Mobile Charger Using Solar Battery and Coin Sensor

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ABSTRACT: Now a day's mobile phone has become a major source of business as well as personal communication. This coin operated mobile phone charger is a new application for those areas where charging resources are not available. These solar based chargers convert sun (light) energy into DC current for a range of voltage that can be used for charging the battery. Mobile will get charge, only when a coin is inserted at the coin insertion slot.

One mechanical slot is attached with electrical triggering in coin insertion slot. If inserting the correct coin then it will send a pulse to the control unit authorizing the start of charging the mobile battery connected to the device. In this project LCD interfacing with microcontroller for displays what action is to be done like the selection of mobile, "How much battery will charge" etc. In this proposed system image processing is used for the correct coin detection

I. INTRODUCTION

The growth of mobile phone market is phenomenal in recent years and the need for charging the mobile battery is required anytime and anywhere. In many developing countries the grid power is not available for few hours to several hours on daily basis especially in semi urban and rural areas where the mobile phones are the essential communication device. While the urban population use more sophisticated mobiles with good power batteries lasting for few days, the rural population buy the pre owned mobile phones that require charging frequently even two or three times a day. A coin based universal mobile battery charger is designed and developed in this paper. This device is like a vending machine for mobile battery charging and the user has to plug the phone into one of the adapters and insert a coin for charging at a constant current for a definite duration. In this paper, the design and development of a coin based universal mobile battery charger based on main power is discussed and this is primarily for rural areas where the mobiles are basic needs for communication and the main power is not available all the time.

II. LITERATURE SURVEY

1. In 2013, S. B. Sridevi had provided a solution to solar tracking. As the sun rises in the east and sets in the west, if the system cannot change the sun's direction, it will not consume maximum sunlight; this makes the system inefficient to overcome the problem solar tracking system has been developed.
2. In 2015, Nupur Khera had presented a solution to improve the control in charging and discharging of the battery. The solar charge controller will prevent the battery from overcharging; thus, it will increase battery life. The solar charge controller will also prevent the reverse flow of current from the batteries to the night's solar panels
3. In 2017, Dhara G. Rangani, Nikunj V. Tahilramani presented mobile charging using a coin in which their main focus was coin detection, for which they have used a cantilever type sensor for coin detection. The cantilever-type sensor detects the weight of the 5-rupee coin and gives a digital signal to ADC. They were using this controller to check whether the coin is original or duplicate. They have also used solar power for charging the mobile batteries and used grid power when solar power is not available. In May 2017, Mr. CV Raja Reddy, Uzoigwe Daniel

III. SYSTEM DESIGN

A) Problem Statement

In today's world, mobile phones are considered as the important part of life. People tend to use its huge features, which consumes charging. Peoples who use to make every long journey may require charging anywhere and if they forget to bring chargers then that would create a problem. Similarly, in many developing areas where grid power is not available for few hours to several hours on regular basis, people may require electricity to charge their mobile phones to continue

with their works. So in order to overcome all these problems Mobile Charging Based on Coin Insertion is designed. It would provide reliable charging services with less cost. This system is very helpful and easy to develop.

B) Objective

- The main objective of this project is to develop Coin based mobile charger by using a Timer IC
- Now days it is necessary because everyone is having his own mobile
- Instead of asking anyone it's better to put coin and charge mobile
- This project is more helpful for the passengers to develop and placed in bus stand, railway station etc
- A standard power supply is used

Block Diagram of Purposed System

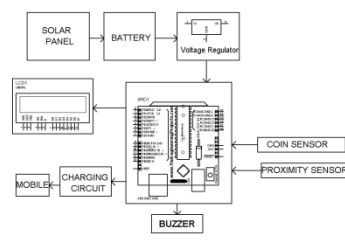


Fig.1

1. **Solar Panel:** A solar panel turns the sun light into electricity. We see electricity at work every day. For instance, when you turn on a lamp, electrons move through the cord and light up the bulb. That flow of electrons is called electricity.

2. **Arduino UNO:** There are many varieties of Arduino boards (explained on the next page) that can be used for different purposes. Some boards look a bit different from the one below, but most Arduinos have the majority of these components in common. Every Arduino board needs a way to be connected to a power source. The Arduino UNO can be powered from a USB cable coming from your computer or a wall power supply (like this) that is terminated in a barrel jack. In the picture above the USB connection is labeled (1) and the barrel jack is labeled.

3. **Coin Acceptor:** A coin acceptor validates coins for vending machines and similar devices, allowing transactions to occur.

4. **LCD:** It is used to Indicate the timing remaining for charging.

5. **Battery:** This block stores electrical energy from solar panel.

IV. WORKING

When a coin is inserted into the coin-based mobile charging system, the phone is charged. This technology is used by store owners and rural residents, and it can be deployed in public places such as train stations and bus stops to allow mobile charging. As a result, the coin acceptor detects legitimate coins and alerts the Arduino to take action. If a genuine coin is found, the Arduino receives a signal and begins the mobile charging mechanism, which provides a 5v supply to the phone via a power supply section. To display the charging time for the cell phone, the Arduino interface the LCD display. The user then inputs another coin, which the Arduino adds to the time left and decrements the countdown once more. This method can be used to charge smart phones in public settings. This coin-based mobile charging device provides sufficient power to the phone and is available on demand in public settings.

V. RESULT

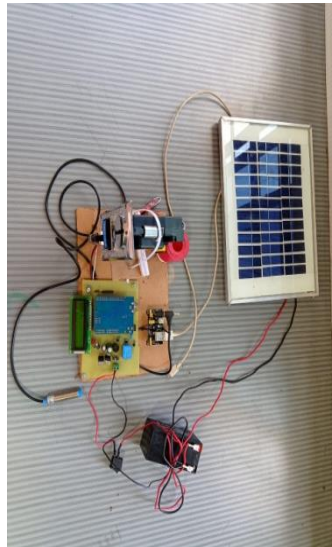


Fig 2 This is the final product made by us.

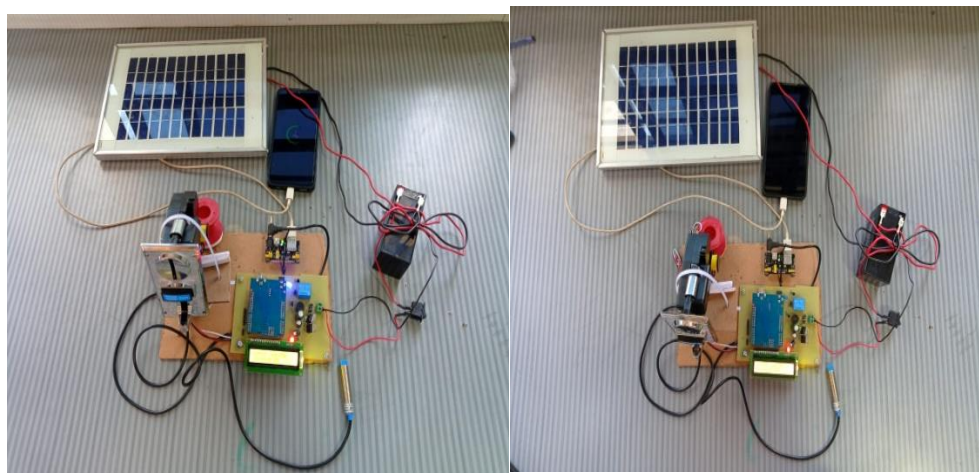


Fig 3& 4: Charger Charging the phone

VI. CONCLUSION

The new manner of offering chargeable services to the general public is described in our article. For the convenience of users, coin-based mobile charging stations have been erected in a number of public locations. It is also less expensive and more convenient for long-distance passengers. his project coin based mobile chargerl is designed and made with the hope that it is very much economical and helpful in many public places. it is also more beneficial to the people to charge their mobile which needs to be charge during urgency period. This project helped us to know the periodic steps in completing a project work. Thus we have completed the project successfully. This project coin based mobile chargerl is designed with the hope that it is very much economical and helpful to many industries which use large electric appliances .In this project, a novel method of charging mobile batteries using power as well as AC power supply with relay switching has been designed and developed for rural and remote areas where the grid power is not available all the time. The mobile communication has become necessity for people staying in rural areas and remote areas. This device is useful for charging mobile batteries as these mobile battery chargers be installed at various public places for the convenience of mobile users for charging purpose



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