Automatic Side Stand Mover for Two Wheelers
Venkatesh. R¹ Manikandan. H² Sundar. D³ Azariah Pravin Kumar. S⁴
¹²³⁴Department of Mechanical Engineering
¹²³⁴Saveetha School Of Engineering

Abstract— The side stand of a motor bike can be retracted automatically by using a motor and shaft circuit controlled by a driver circuit. The power supply can be given either by an external source like batteries or by internal power sources. The side stand of a motor bike is connected with the motor using a shaft. This motor is driven and controlled by a driver circuit and a micro controller. The rotation of the side stand and motion of the motor is controlled by the driver circuit which was internally connected with the motor. The motion of the side stand is monitored by a limiting switch. When the starter button is pressed the motor rotates in a direction to lift the side stand up. When the side stand reaches its limit, the power supply is cut off which can be identified using a limit switch. Micro controller and driver circuit are responsible for the direction of rotation of the motor. The driver circuit gets reversed. Hence the motor rotates in the opposite direction. There will also be a limit switch at the original position of side stand before retraction. The power supply will be stopped as soon as the side stand reach the limiting switch. This technology can be regarded as the lifesaving one. About 80% of the accidents takes place due to the carelessness of this sort. Safety is the first and foremost motivation behind this system. Reduction of human work can also be achieved by this system. The cost and maintenance of the system is also economical.

Key words: motor, driver circuit, micro-controller, polarity, and limit switch

I. INTRODUCTION
In this modern days and in future generation, the usage of automatic technology is considered in major priority. Our concept is to lift the side stand of a motor bike automatically with the help of a motor and a shaft arrangement using a controller circuits like micro controller or stopper circuits. This automatic technology is applicable to all the two wheelers with self-starting facility. In those two wheelers without self-starting facility, a separate power source can be given to apply this technology. This technology is most important because of the number of accidents take place because of Carelessness is very high. So it is essential to have a system to nullify this effect.

II. MATERIALS AND METHODS
The components used for this system are as follows:
- Battery
- Motor
- Shaft
- Micro controller
- Driver circuit
- Side stand

A. Battery:
The battery is the power source for the system. The power is supplied to micro controller. The switch and the driver control regulates the power supply before the power is supplied to the motor. The battery range is between 5-12 amps.

B. Motor:
The motor used to rotate the side stand can be 12v dc motor. The motor may run at 60-100 rpm. The power supply must be given to this motor by a battery. The other end of the motor is connected to a shaft. This motor helps to rotate the side stand of the motor bike.

C. Shaft:
A shaft is nothing but a rod which is employed in mechanical systems to connect two bodies. The shaft length must be less than 10cm.

D. Micro-Controller:
A microcontroller is a compact microcomputer designed to govern the operation of embedded systems in motor vehicles, robots, office machines, complex medical devices, mobile radio transceivers, vending machines, home appliances, and various other devices. The micro controller used here is atmega 8 which is used to control the driver circuit and the switch. This micro controller has 16 ports. The ports used are 2,3,4,5. A crystal oscillator is an electronic oscillator circuit that uses the mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a very precise frequency.

This frequency is commonly used to keep track of time (as in quartz wristwatches), to provide a stable clock signal for digital integrated circuits. Arduino program is used to program the micro controller.

E. Driver Circuit:
The driver circuit of a dc motor is nothing but a device which is used to control and change the direction of rotation of a dc motor. This driver circuit uses computer programming to perform this operation. The driver circuit produces an impulse which decides the direction of the rotation of the motor. The driver circuit is L293D driver circuit.

F. Limit Switch:
A limit switch is configured to detect when a system's element has moved to a certain position. A system operation is triggered when a limit switch is tripped. The power supply will be stopped automatically when the side stand reaches the limit switch.

III. WORKING PRINCIPLE
When the starter button is pressed, the power is transmitted through the micro-controller and the driver...
circuit. The power is transmitted to the motor as impulse from driver circuit. This driver circuit controls the direction in which the motor rotates. This impulse causes the motor to rotate.

As the motor rotates the side stand also rotates which is connected to a motor by a shaft. When side stand reaches the limit switch which is placed at a certain position, the power supply is stopped. The side stand holds its mean position. Micro controller helps to control the timing of the shaft rotation.

When the push button is pressed, the motor rotates in the opposite direction which makes the side stand to come back to its original position. The limit switch is placed at the original position. As soon as the side stand reaches its original position, the power supply will be stopped automatically.

IV. RESULTS
- The side stand of the motor bike is lifted automatically by this method.
- The movement of the side stand is automatic.
- The side stand is lifted up with least fatigue and the work done.

V. CONCLUSION
A. The Existing Model Is As Follows:
- Manual stands
- Stands with springs
- Stands with indicator

B. The Drawbacks Of The Existing Model Are As Follows:
- Accidents are bound to happen
- Maximum fatigue in the existing models
- Only indicate the position

C. Innovations Which We Made Are As Follows:
- Self-retracting
- Human error nullified
- Realization not required

REFERENCES
[8] Microcontroller based data acquisition system for silicon photomultiplier detectors N C Ryder 2013 JINST 8 C02019
[10] Control system design of mechanical systems with time varying mechanical and control parameters Kazuhiko HIRAMOTORReleased: September 01, 2001