MOTIVATION:

Currently window cleaning is done in large buildings by workers.They need to put their life in danger to clean the windows.It is not good to put someone’s life in danger.

A windshield wiper or windscreen wiper is a device used to remove rain,snow,ice and debris from a vehicle's windshield or buildings window.A wiper generally consists of a metal arm, one end pivots , the other end has a long rubber blade attached to it.The arm is powered by a motor.Often an electric motor,although pneumatic power is also used for some vehicles and large buildings.The blade is swing back and forth over the glass,pushing water,other precipitation or any other impediments to visibility from its surface on some vehicles,a windscreen washer system is also used to improve and expand the function of the wiper(s) to dry conditions.This system sprays water or an antifreeze window washer fluid at the windscreen using several well -positioned nozzles.This system helps remove dirt or dust from the windscreen when it is used in concert with the wiper blades.

PROBLEM STATEMENT

Our group is making automatic window wiper to clean the windows of large buildings and skyscrapers.Currently window cleaning is done in large buildings by workers, which is very dangerous for them as they have to hang from great height to clean the window.

IDENTITY NEEDS

The exterior surfaces of windows at higher elevation (example the windows of a skyscraper) are typically cleaned by workers standing on the vertically movable scaffold suspended by cables or ropes secured to the roof of the building.As can be appreciated this is dangerous and time consuming work.

EXISTENCE

Several designs have been proposed for devices that are accomplish washing of Windows without requiring a worker to manually wash the exterior windows Surface proposition outside of the building.Many of such devices lead failed to provoke much interest with architects and engineers as they required a worker to position him/herself outside of building to set up the window washing apparatus.

Other,permanently installed devices had been proposed but Some proposals utilized extremely bulky and unsightly devices.Accordingly, There is a continuous need for new and improved device for washing the exterior surfaces of Windows .

Background research

•US PATENT NUMBER-5,515,570

A windows by means of a ceramic rectangular permanent magnet, or magnets, which has wiper blades attached. This unit is called the slave unit. On the opposite side of the window surface is a ceramic rectangular permanent magnet or magnets, which is called the master unit. When the two units are placed opposite each other across the window surface the magnetic attraction pulls the slave unit wiper blades against the window surface. When the master unit is moved across the window surface, the slave unit follows in unison on the other side and the wiper blades flip-flop wiping the window clear.

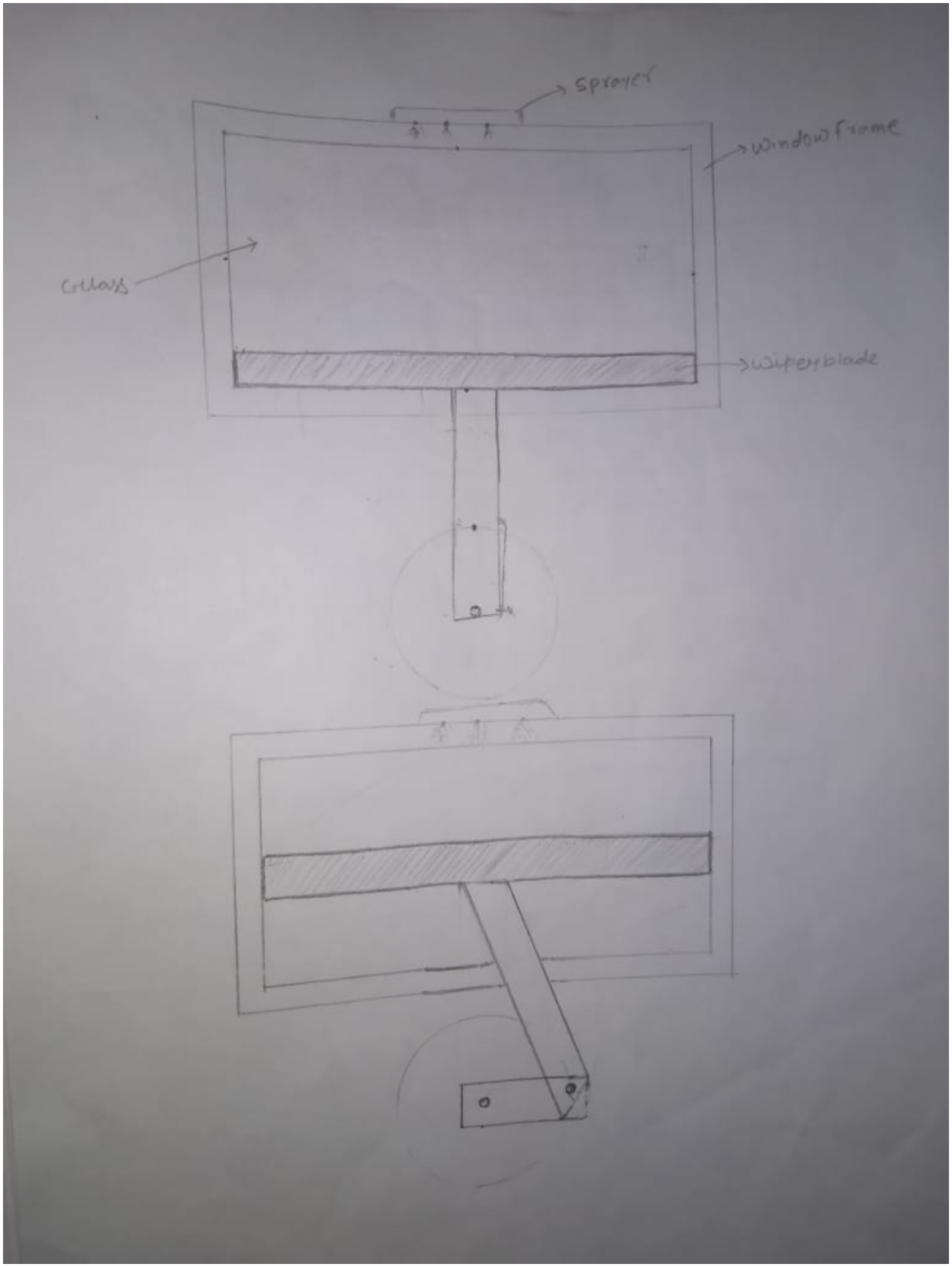
IDEATION AND PROPOSED SOLUTION

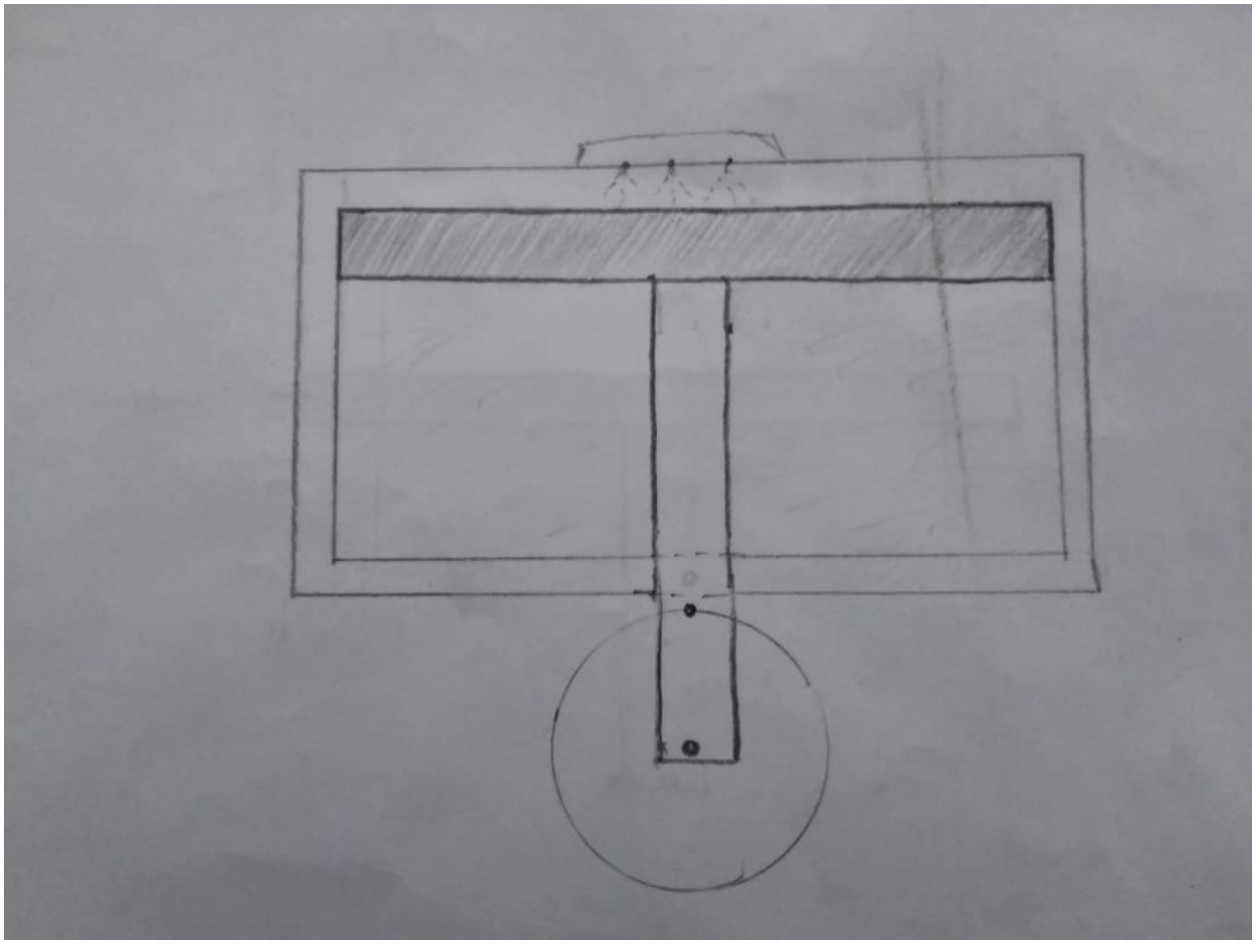
We wish to install simple system attached to each window consisting of window wiper blade,cleaning fluid and basic electronic.When switch is pressed, all Windows are cleaned by spreading the cleaning fluid and followed by a cleaning swipe by wiper.

The wiper, which is available, needs to be run by humans or robots. There are various types of models available in the market in which wiper is fixed in a robot.

We improve this model two more advanced and automatic such that by clicking to the switch,wiper spread the fluid and wipes the glass within a few time.

Wiper is attached to the traditional window frame and it works when we press the switch.


sprayer
window frame
Glass
wiperblade



WORKING OF WINDOW WIPER

The cleaning mechanism includes one or more cleaning tools such as a brush and wiper blade, and an onboard electric motor that provides the motive force for moving the cleaning mechanism.

We will fix the wiper to each window frame which is run by an electric motor the motor.The motor gets electricity from electric source and derives output mechanical power for rotating.The drive wheels move along the track.

FINAL SOLUTION

We will use slider-crank mechanism in which the rod will be attached to the wiper. Rod will be connected to the crank which is going to connect with rotating disc. It will convert the rotational motion into translational motion.

Technical aspect in new features and working of spray for cleaning window

:Wiper wiper is going to run by electricity and it will be automatic for cleaning fluid. We will connect the water tank present at the top of the building.When the cleaning solvent get sprayed on the window and glass gets clean by the wiper.

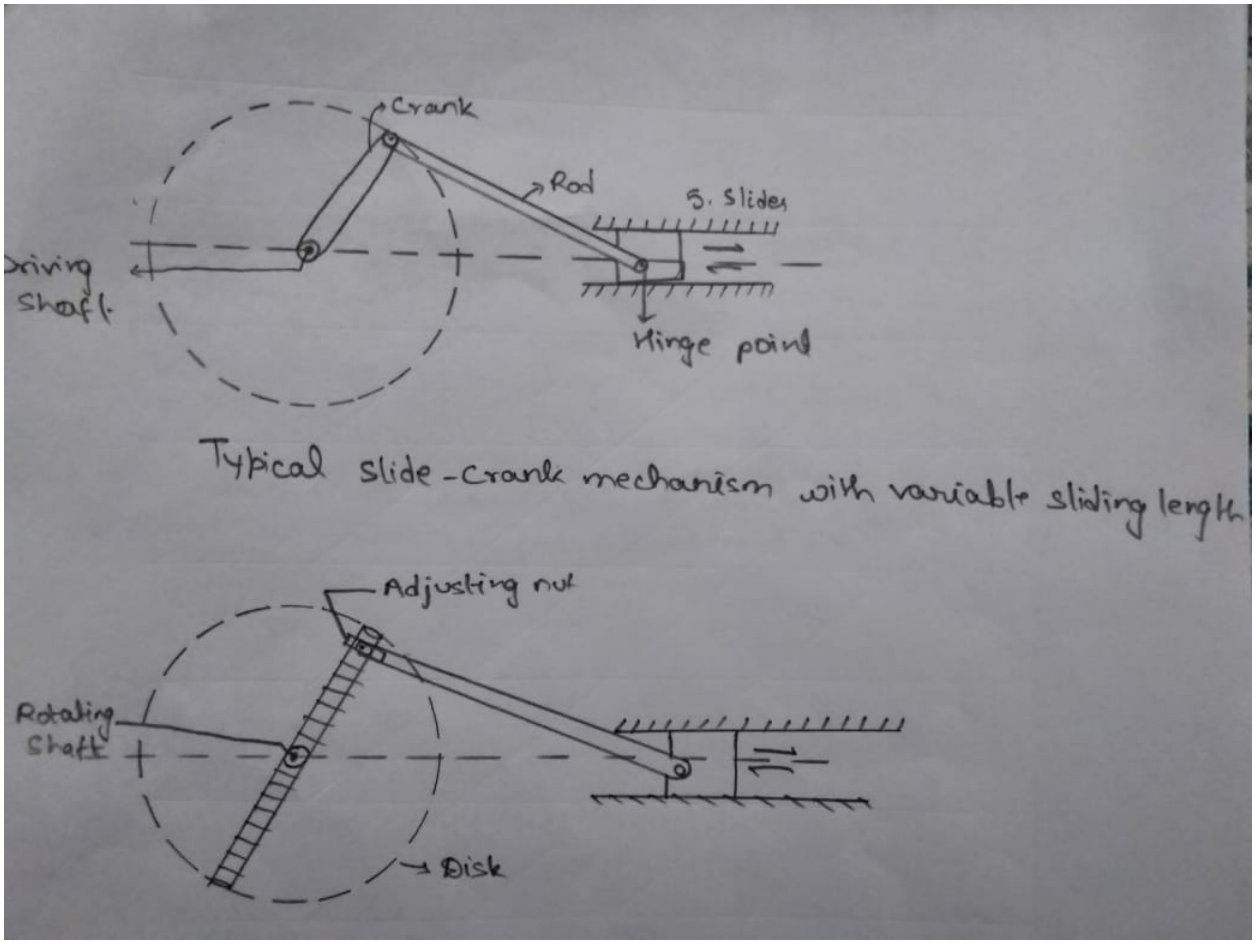


Fig.3 Crank mechanism with variable sliding length

PROGRESS MADE SO FAR-

1) We have created designs for our project.

2)We did a literature survey of our design so that we can make new design and resolve any problem if occurs in future by taking reference from the old existing one.

3) We have made a presentation which will play a very important role in project formation.

STAKEHOLDER INFORMATIONS

People having tall multi storey buildings with glass Windows required the most. As they appoint workers for this purpose and this is dangerous and time consuming work. This can also be used by Institutions and other organizations for cleaning purpose at high level.

HAZARD ANALYSIS

The attachment of window wiper to the glass window is challenging for all of us as the weight of window wiper can become a major issue. Heavy weight devices are not suitable for moving in the vertical direction. The weight of the electrical motor is matter of great concern. We will search for the light electrical motor to make our device efficient.

Contribution of each group members

Our group members are Sandip Kumar Burnwal,Rishav Kumar and Ramresh Meena.All played their role very nicely and contributed towards the formation of project.Rishav and Ramresh Meena Mainly contributed for presentation making of the project.All the animations and video are created by Rishav.Sandeep created the blender animation with the support of Ram which was really a tedious work.Sandeep created the draft of the project which contains all the information regarding project in written format.Ramesh did the literature survey which play a very important role in project formation till now.

Work to be done in the coming semester:

In the next semester we will assemble all the parts of the device and make it autonomous. We hope that will make the device nicely with the help of all group members.