Reconfiguration of Windows

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Abstract—**This paper discusses the need for the reconfiguration of windows. And it can be done by introducing mirrors with windows. And that can be done by converting windows into mirrors just by one switch whenever we want. This means we can change windows into mirrors in one go, at any time. By simply sliding the reflective coating shutter into the backside of the window glass. Whenever we want to use a mirror the reflective coating shutter will slide from its original place to the back side of the window glass and it will work as a mirror. And when we want a window, by one switch it will again convert into a window glass and during this process, the reflective coating shutter will slide back into its original place by giving us back the window.**

Index Terms— **Mirror, Reflective coating, Window, Window glass.**

INTRODUCTION

It all started when humans started thinking of self-consciousness and how they look physically and it turned out to be a great help in grooming. The main part was self-monitoring, people started using mirrors highly for grooming purposes. We all know how much beauty and looks matter and it has the same impact in the olden days too as it has in modern days and that was also one of the reasons why they came across the idea of creating mirrors.

Somewhere around 4000 BCE in Anatolia (modern-day Turkey), people started using polished obsidian as a mirror. now here obsidian is formed by lava when lava gets excreted from the volcano it cools and has minimal crystal growth when cooled down and it becomes volcanic glass, it is an igneous rock. In ancient times this rock was used as a weapon and cutting tool because it is as sharp as surgical steel scalpels. But as time passed humans started using obsidian as a mirror by polishing its surfaces, but the reflection it tends to show was not as clear as mirrors having reflective coating surfaces it used to show blackish reflections or we can say dark glassy reflections.

It is found that from the Bronze Age, people were using mirrors which were made from discs of metals like copper, silver, gold, lead, and bronze. They used to polish this metal disc and then they were used as mirrors. Which was expensive because of the metals used in it. This only made wealthy people have those sorts of amenities. But it was for decoration purposes because of its small size because of metal used in it made mirrors heavier, so they produced smaller mirrors than bigger ones. Its diameter was not more than 3-8 inches (7.6cm – 20.3cm). It was circular in a flat shape with a handle of wooden metal attached to it.

The middle age was when Contemporary mirrors started to be produced but were still expensive and difficult to manufacture. The biggest problem was, they used sand for making glass and sand was not pure it used to have impurities and it used to become hard for them to achieve clarity. This led to the high cost of mirrors.

By the early Renaissance period, better and clearer mirrors were found. The fire gilding technique was developed to produce highly and evenly reflective tin coating for glass mirrors. They used to coat the back portion of the glass with tin-mercury amalgam, and the mercury which was used to be present was then evaporated. The evaporation was done by heating the piece. The fire gliding process was a better process than the molten lead process. Because it causes less thermal shock to the glass than the older method.

In the same way from last centuries, windows are one of the main elements in construction which have gone under a lot of innovations over the years. From changing shapes to sizes to materials etc. Changes have taken place and growing technologies and our living habits have greatly impacted the revolution of windows. A window is one of the construction features that help us stay connected with the outer environment and the nature surrounding the building.

Windows are the opening that allows the structure to exchange light and sound. In the olden days, the windows used to be unglazed openings to get light in the building or leave the area. Romans started using glass in windows. Which was one of the evolutions

that took place. Roman people were famous for their creative skills, which they showed in creating windows with the use of colored glass.

Gradually as time passed many different types of windows were built with the help of glass and also grill. Grill helps in the prevention of falls from height and it is also used for aesthetic purposes it also helps in keeping buildings secured from strangers and also insects, etc.

There are many types of windows as per our requirements and choices. For instance, rose windows, double panel windows, bay windows, pocket windows, sliding windows, and pivoted windows. And even today these windows are modernizing for better and cozier living.

DISCUSSION

The discussion aims to focus on the innovation of windows but from a different and better viewpoint. The world needs something more energy efficient with more features; people worldwide are searching for something with more features than one. Something that can help us in more ways than in a single way. Windows are one of the most important elements in buildings as it works as a passage for the light into the building no matter how small or big the area is we need a window for ventilation purpose and also for staying connected with the surrounding. As the world is changing, we are coming across numerous examples of reconfirmations around us in every product like smart lights in which you can change the colors of light with one touch with the help of software, we have fans with inbuilt lights in it. Sensor lights are also one of the best innovation examples and also one best examples of energy efficiency. There are so many products and things around us that are transformed into new things with the help of technology with new and efficient features which are helping us in daily life making it easy to live than before. Modification is key to ease of living and that's for sure. Each and everything need modification as time passes, we can't leave with old methods and products, and amenities. Amenities need to transform with time. And as we are living in a digital era, we are always looking for products and services that are easy to use and can be handled by smartphones or devices with total ease and from anywhere around the world.

And when we come across windows the same thing popped into our minds. What windows give us? How it is used? what are their functions? And all that we got as an answer is that they work as a ventilator and are the source of natural light and nothing else. Windows are just for wind and light sources nothing else. So here we can do something that can help us to innovate windows. So that we can get two things in one it can be done by merging the mirror with the window so that we get two things in one thing. Firstly, a window and secondly a mirror.

And with this, we can transfer the window into a mirror with just one switch or touch. This transformation can solve many problems. Firstly, we will get a big mirror. As we will change the window into a mirror, will eliminate the need to close the curtains while changing clothes or using the closet or anything else, because when we will change the window into a mirror the backside of the window glass will be covered by a reflective coating shutter with a darker or opaque backside and it will cut the source of light that will come in the room so that the window will perform the role of a mirror and as the backside of the window glass will change into black. So that nobody will be able to see through the window which is a big advantage of having such type of window. This window might end up being the best illustration of privacy. And this window can be used anywhere for instance in vanity rooms or bedrooms and anywhere we want.

If we create such type of window which will work as a mirror as well as a window, we will get two features in one product. But the question is how to create them. How to convert windows into mirrors in one go and here comes the solution. As we know that there is this one thing that is common in both windows and mirrors and that is glass. Windows also has glass and mirrors also have glass in them. And as far as we have studied, mirrors have glass from one side, whereas the other side is completely made by applying a reflective coating to it. And in windows window glass is fully see-through glass light travels directly from glass from one side to another side of the glass. And when we talk about restructuring windows, these things play the most important role in creating a two-in-one window. And that is how we can create a window with a mirror as windows already have glass, we just need to apply a reflective coating shutter to it on the backside of the window glass shutter. So that the window frame will first have a window glass shutter and then it will have a reflective coating shutter in the backside of the

window glass which will be the second shutter in the window frame. And it will help the window to turn out to be an exact mirror. To make a mirror we know that one side should be coated with silver or aluminum as it will play the role of the reflective coating so that one side of the glass will reflect light and as the other side is coated it will start working as a mirror. And we will be able to use it as a mirror. As the light will reflect from one side and it won't be able to transfer through the glass.

But this only happens when we want it to. Other times it will act as a window through which we will be easily able to see through the window and when we want to use a mirror just by one switch, we can change it into a mirror. When we want it to act like a mirror, we just need to be in mirror mode and automatically the reflective coating will appear on the back side of the glass. We will be able to use it as a mirror and when we turn off the mirror mode the reflective coating will slide into the wall in its original position through the mirror frame.

The mechanism which is used here will be the same as the Pocket Window mechanism for those who don't know how pocket windows work it is basically a wide window whose half part is hidden in the wall and the other half is visible, the window has sliding shutters and when we open the window sliding shutters slides directly into the hidden part of the window which is hidden in the wall so that we can't see the shutters of a window when it is open and when we want to close the window it slides out of the hidden part of the window which is situated in the wall to the visible part. And same as that mechanism the reconfigured windows will have half window hidden in the wall and half will be out like a normal window that can be seen and the reflective coating shutter will be hidden on the hidden part of the window which is hidden in the wall and when we switch on the mirror mode the reflective coating part which is hidden in the wall in its original position will slide behind the window glass and will transform the window into a mirror and when we don't want a mirror the reflective part will slide back to its original position which is in the hidden part of the window in the wall.

ISSUES & SOLUTION

We all know that we all want a big mirror in our rooms but because of some problems, conditions or issues we are not able to have a big mirror in our rooms and this problem can be solved by using a window as a mirror just by adding a reflective coating shutter in the backside of the window glass in sliding medium and this problem can be solved. And with the help of mirrors, we can make rooms look bigger in size. We can also solve the problem of privacy. We all need privacy, especially in bedrooms and vanity rooms and this can be solved by changing a window into a mirror, when we will convert a window into a mirror the backside of the window glass shutter will be covered by a reflective coating shutter and it will help to stop light from traveling into the room through it as the reflective coating shutter will be opaque from the backside of it and the person from the other side of the window or the person outside the room will not be able to see through the window and we will get full privacy, without using curtains.

CONCLUSION

Windows are used from the earlier period now and windows need modification this window plus mirror transformation can turn out to be the best modification ever and this can be the best way to reconfigure windows. And this window is economical as we are getting two elements in one thing. We can use this type of window anywhere we want and this can also be used as an aesthetic element in structures. And this type of window can also make rooms look bigger in size than their actual size.
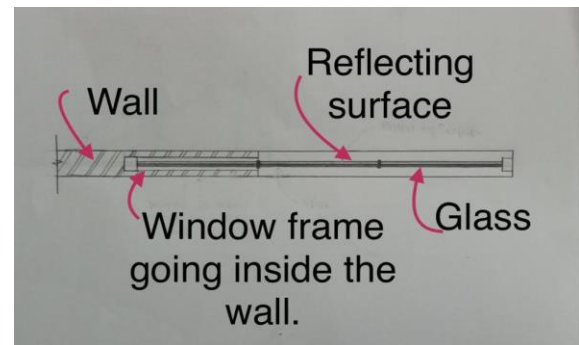

Fig- Section of Reconfigured Window

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