

Ternate Pen

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Abstract— Living in 21st century where everything is digital, from making a morning coffee to putting an alarm to wake up next day everything is computerized and modern. This makes life easy and fast, which is actually important as every human is running to work and time is running even faster. Looking forward if every necessity of human has become A.I. then why not a pen? A pen has been the most basic need for people; everyone from a 5 yr. old school kids to the professional writers every age group people need a pen. An idea of using single pen to write with different colors. Just by simply selecting color shade on software controlled on mobile or laptop, we will be able to write with any choice of color in just one click.

Index Terms— Pen, Fountain, Ink, Refill, Color, Cartridges.

INTRODUCTION

An everyday writing tool known as a pen is used to write or draw on a surface, typically paper. Early pens, including reed pens, quill pens, dip pens, and ruling pens, stored a little amount of ink on a nib or in a small cavity or void that needed to be periodically replenished by dipping the pen's tip into an inkwell. Today, these pens are exclusively used in a select few specialist fields like calligraphy and illustration.

The first pen with a reservoir is mentioned in history around the 10th century AD. Ma'd al-Mu'izz, the Fatimid Caliph of Egypt in 953, asked for a pen that would not stain his hands or garments and was given one with an ink reservoir that sent ink to the nib. The mechanism of this pen, which may have been a fountain pen, is still unknown, and there is just one record that specifically mentions it. In 1636, a reservoir pen was created.

Fountain pens include a barrel that contains the ink, which is typically either filled mechanically or by bulk injection at one end using a syringe or eyedropper pipette. Ink for these fountain pens is sold in bottles that can often refill a single pen ten of times. Simpler fountain pens employ ink cartridges that have already been filled with ink, although in many cases, the

cartridge can be changed for a converter that imitates the mechanical filling motion of more expensive pens. While cartridges can sometimes be easier to use, the cost per milliliter of ink for bottled ink is typically lower than for cartridges.

A color wheel or color circle is an abstract, symbolic arrangement of color hues in a circle that illustrates the relationships between primary, secondary, tertiary, and other color hues.

Isaac Newton provided a color circle to show the relationships between these hues in his book Opticks. Isaac Newton's first color wheel only displayed spectral hues and was intended to demonstrate a formula for how to roughly estimate the color of mixes of lights based on the Centre of gravity of the quantity of "rays" of each spectral color present (represented in his diagram by small circles).

DICUSSION

Using various pens for different color consumes time and efforts. Rather than using each pen separately it will be more convenient to simply handle one single pen. Color wheel states, any color can be obtained by three basic colors known as primary color which includes red, blue, and yellow color.

Traditionally fountain pen includes a single refill which is usually replaceable. By including three refills in a single body of pen we can exceed possibility of using different colors. The mechanism includes mixing right amount of color and then pushing the ink to the tip of pen.

Software controlling the grid of color, quantity of ink in refill and ink that must be mixed. An app will be connected to mobile using Bluetooth. A simple grid pattern will be easy to understand and also handy to use. This all process will only take few second of time. A proper use of technology can make any work fast. While writing if the user ran out of ink, a pen will automaticity prepare the previously selected color ink this way the user does not have to do the process of

selecting color and quantity all over again in middle of writing.

The majority of color wheels have 12 basic divisions made up of three primary colors, three secondary colors, six intermediate colors created by combining primary and secondary colors, known as tertiary colors, and some add additional intermediates for a total of 24 designated colors. They apply the trichromatic theory of color.

The pen will contain 3 sets of ink containers of primary color. When writing by simply selecting the color shade the required ink from each refill will be pushed in the mixing tube. The ink will get mixed in the tube and then passed to the nip of pen.

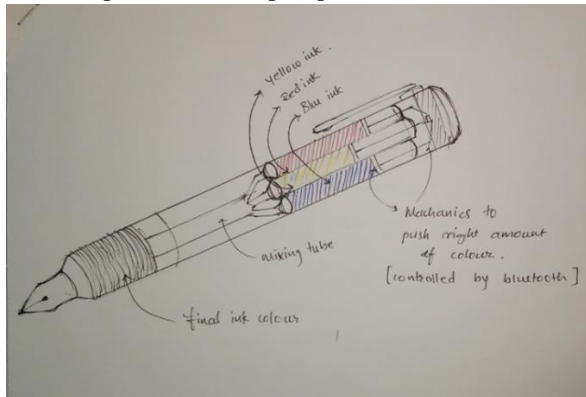


Fig- Sketch of Ternate Pen

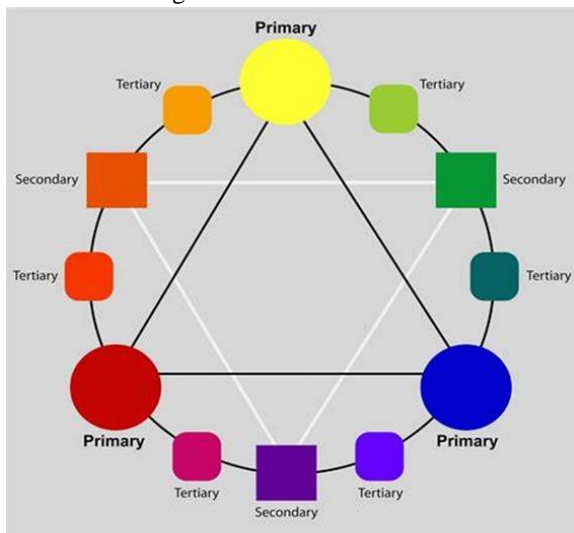
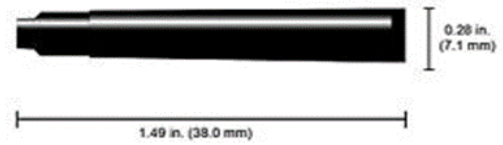


Fig- Color Wheel

The standard size of ink refill can fit 7ml of ink in it with the diameter of refill being 7.1mm. there are many other types of refills available, some have more diameter and lesser length, and some have mote length and lesser diameter. To fit 3 ink tubes the diameter of them must be less than 4mm and length can be more

than 40mm, this way there is room for all 3 ink tubes. These sizes will also not affect the weight and diameter of outer body of pen.



International standard size to fit most fountain pens worldwide.



Ink Capacity	Measurements	Compatibility	Type	Connector Inner Diameter	Price
.7 ml	75.5 mm length 7.9 mm max. diameter	Aurora, Parker	twist converter	3.0 mm	\$21.25



Ink Capacity	Measurements	Compatibility	Type	Connector Inner Diameter	Price
.7 ml	75.4 mm length 7.8 mm max. diameter	International	twist converter	2.25 mm	\$6.00

Fig- Measurement of Ink Cartridge and Fountain Pen
The pen will also be available in 5 refill type including black and white color with the primary color. This pen will give the perfect values of every color, whereas the three-color pen will be just giving the hues of color.

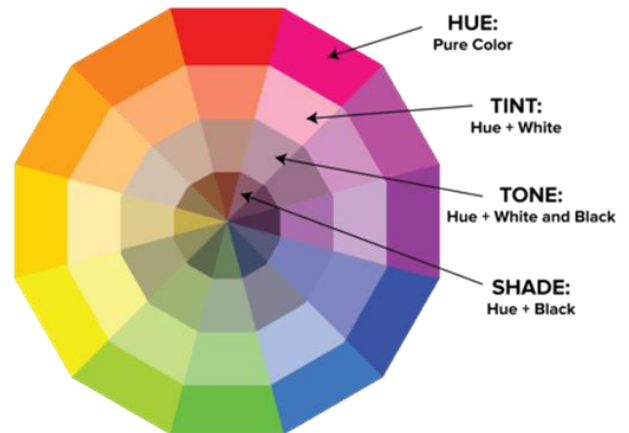


Fig- Color Relation and Mixing of white and black in hue

ISSUE AND SOLUTION

Students always go through the problem of changing pen while writing. This pen will ease those efforts. The single pen will take less space than those carrying 12 pens of 12 different shades. The design of pen looks

similar to any normal pen which makes it easy to use and handle.

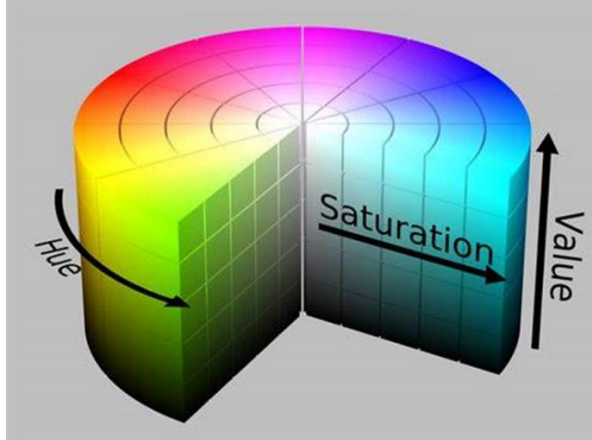


Fig- Effect of Saturation and Value on Color hue

CONCLUSION

As discussed above, the idea is an innovation that relate a simple object, pen to the world of technology. The pen will come in great use for every type of people. From artists to authors this pen will create an ambience to write on paper.

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