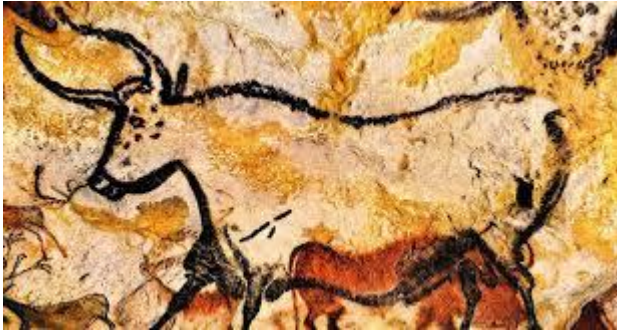


The Pencil

By Josiah Polhemus

Before the Pencil

- Cavemen carving on walls
- Ancient Sumerians and Babylonians wrote in clay tablets
- Reed and quill pens



The Problem

- There was no initial problem but this invention solved many problems like:
- Humans needed an easier way to write
- Way to write without spills
- Way to erase writing

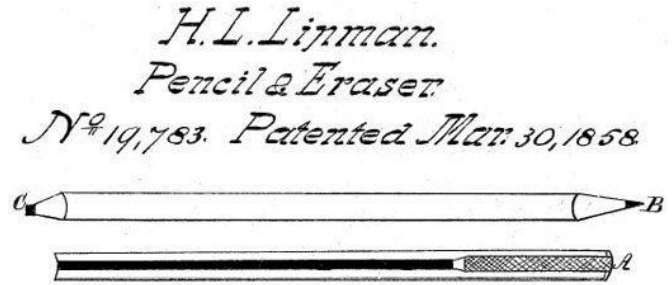


The Solution

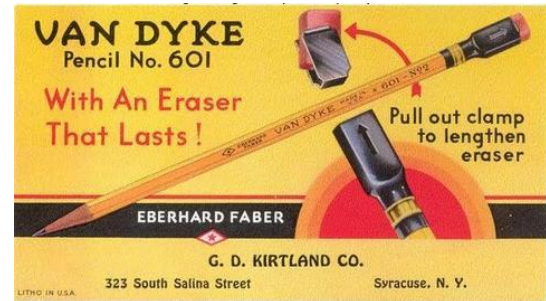


- discovery of a large graphite deposit in Borrowdale, England in 1564 led to the pencil
- Conrad Gesner first described a writing instrument in which graphite was inserted into wood
- Graphite sticks were cut and wrapped with string or inserted into hollowed-out wooden sticks
- Nuremberg, Germany was the birthplace of the first mass-produced pencils in 1662
- N.J. Conde invented the modern pencil (idea of mixing powdered graphite with clay and pressing the material between two half-cylinders of wood)
- Hymen Lipman patented the installation of a rubber eraser at the end of a wood-cased pencil (1858)

How it works

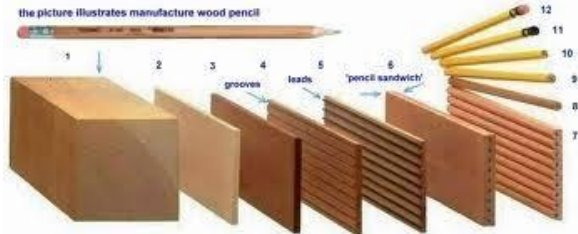


- Graphite leaves mark on paper
- metal tube wraps around end of pencil and eraser



Engineering Process

- Graphite was mined and cut into rods
- Wood was attached to the graphite because it was brittle
- Later clay and graphite powder was mixed and hardened and placed into a wood cylinder
- Grooves cut into wood, cores inserted and covered with more wood



Improved?

- Pencil was first improved when eraser was attached
- Mechanical pencils solved the problem of having to sharpen pencils



Outcome

- Most used writing tool
- Widespread use of erasable writing utensil
- Cheap and useful way to write or draw



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