

Spark of Ingenuity

The modern match has a poisonous history

BY LISA DE NIKE

In the first book of the Bible—Genesis—God shows his power and love for the universe by proclaiming, “Let there be light.”

It seems certain that some of the earliest mortals on Earth—the cavemen that anthropologists call “Neanderthals”—felt almost godlike when they stumbled across the fact that rubbing two dry sticks together brought to life an important form of light: fire. The ability to control that element put early humans in command not only of light, but also—more practically speaking—of the ability to cook food and to stay warm during the winter months.

Today, of course, we use a handy little tool called “matches” to conjure a flame in little more than the blink of an eye.

How, though, did we go from frantically rubbing two dry twigs together in a desperate wish for light and heat to being able to casually call up a tiny blaze with the scratch of a match?

Historians tell us that the ancient Chinese—who also gave us noodles and paper—are credited with inventing an early form of the match (which they called “fire inch-sticks”) in or around A.D. 577. In the midst of a war between the Northern Zhou and Chen dynasty armies, housewives trapped inside city walls and without many sources of kindling figured out how to saturate dry pinewood sticks with sulfur, which burst into flame when ignited by another

fire, allowing them to share fire, keep warm and cook food.

The history of the modern match doesn’t show much progress until the late 17th century. That was when famed chemist and physicist Robert Boyle, best known for “Boyle’s Law” (pressure times volume equals a constant for an ideal gas) had an idea: He dipped a small piece of wood in sulfur, and coated a small piece of paper with phosphorus. When he dragged one across the other, it sparked a flame.

It was an interesting experiment, but no one pursued it further until almost more than a century later (1826-27) when John Walker, an English apothecary and chemist, invented the very first friction match. He coated the end of wooden sticks with a mixture of potassium chlorate, antimony sulfide, starch and gum and let them dry. When drawn across a hard surface, they sparked a fire.

Walker was smart enough to know that he had a moneymaker on his hands, but he was in such a rush to sell his “Congreves” (named after a rocket invented in the early 1800s) that he rushed to sell them without taking out a patent to protect his intellectual property. As a result, Samuel Jones, who knew a good opportunity when he saw

one at one of Walker’s demonstrations, patented the invention in his name, and renamed them “Lucifers.”

Lucifers quickly became immensely popular, though they apparently smelled absolutely foul. That problem was tackled in the early 1830s by a French chemist named Charles Sauria, who—cleverly, he thought—added white phosphorus to the recipe to negate the disgusting odor. There was only one downside: White phosphorus is highly poisonous, and sickened many of those who worked in the factories that manufactured the matches. As a result, several countries actually passed laws prohibiting the use of the poison in these products.

In 1910, the Diamond Match Co., headquartered in Ohio, substituted sesquisulfide for the dangerous white phosphorus and patented this first non-poisonous match. Today, around the world, people use more than 500 billion matches a year. 

