

HOBBY HISTORY

The Problem With Early Matches

reprinted from Boyce Rensberger

For thousands of years, people made fire by twirling a wooden stick against another piece of wood or by striking stones—and later flint and steel—together to make sparks. Starting a fire was so difficult that once it was going, people tried never to let it go out. They worked to keep at least a few coals going. Even 5,300 years ago, the “Iceman,” whose body was found in the Alps in 1991, was carrying an insulated container thought to have held embers for starting fires.

Then, in the 1820s came the match, the world’s first cheap, convenient method of producing fire at will. Convenience was crucial. Earlier attempts to make easy fire-starters were inconvenient and dangerous. In 1680, Robert Boyle, the English chemist, discovered that, when phosphorus and sulphur were rubbed together, they would burst into flame. But the method was so dangerous that it remained a novelty rather than a practical solution.

A hundred years later, French inventors produced the “phosphoric candle,” a twist of paper tipped with a form of phosphorous that spontaneously bursts into flame on exposure to oxygen. In the phosphoric candle, a glass wall separated fuel and oxidizer. A user would break the glass to make fire, but it was much too expensive for everyday use.

In 1827, John Walker, an English pharmacist, invented the first modern match. It was a wood splint tipped with antimony sulfide and potassium chlorate mixed with binders and fillers such as gun arabic and starch. Swipe the dried blob of chemicals through a fold of sandpaper, and it would burst into flame. Walker called his matches

“Friction Lights.” They also were called “Lucifers,” a play on two meanings of the word. *Lucifer* is Latin for “light bringing” and was one name for the Lord of the sulfurous fires of Hell.

Unfortunately, Friction Lights also produced an annoying shower of popping sparks. Matches that ignited quietly and smoothly came on the market in the 1830s, using phosphorus compounds that did not ignite spontaneously at room temperature. Instead, they required only a modest addition of warmth, which could be provided by rubbing the match on almost any surface.

So-called “strike anywhere” matches were manufactured widely in Europe but had one serious drawback. A little too much accidental friction would ignite them. Also, the “white phosphorus” they used for fuel is poisonous. It was said that a single pack of matches had enough phosphorous to kill a person.

One solution was the substitution, in the late 1800s, of yet another form of phosphorus—non-toxic phosphorus sesquisulfide. That ended the threat of poison-related disease in Europe, but the formula did not work in the more humid climate of the United States until adapted in 1910 by a chemist at Diamond Match Co.

Diamond’s new match was such an advance that, in 1911, President William Howard Taft asked the company to relinquish its patent so all manufacturers could use the process. Diamond agreed.

Another advance was the “safety match,” which overcame the hazard of the “strike anywhere” design. The first safety matches were developed in 1844 by Gustaf Erik Pasch, a Swedish chemist, who changed the chemical formula and separated the necessary ingredients, putting one in the “friction strip” and others in the match head.

Although “strike anywhere” matches are still manufactured, the safety version dominates today’s market.