

UNITED STATES PATENT OFFICE.

CHARLES W. SMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN FRICTION-MATCHES.

Specification forming part of Letters Patent No. 34,649, dated March 11, 1862.

To all whom it may concern:

Be it known that I, CHARLES W. SMITH, of the city, county, and State of New York, have invented an Improvement in the Manufacture of Friction-Matches, for which I desire to secure Letters Patent; and I declare the following to be a full description thereof.

The nature of my invention consists in the use of paraffine both as an intermediary to communicate the flame generated by the ignition of the phosphorus or its equivalent at the extremity of the match to the less inflammable wood of which the body of the match is composed, and at the same time as a varnish to protect such igniting material from the action of moisture.

The various compounds of phosphorus or chlorate of potassa with niter, glue, or gum, &c., which are in common use in the art all burn with a flame of too low a temperature to readily ignite wood. Hence it is found necessary to dip the splints in some substance which will take fire by the flame of the phosphorus and nevertheless generate sufficient heat to ignite the wood. Sulphur is the material commonly employed; but the offensive fumes given off during its combustion have led to various efforts to avoid its use. Beeswax has been sometimes used; but its high cost is a serious objection, and it is also less inflammable than sulphur. Stearic acid has also been tried; but it fails to ignite more frequently even than the wax. The only way in which these latter substances can be successfully employed is by using a largely-increased amount of the phosphorus or other composition employed to tip the matches. In consequence of their cost such matches have failed to come into general use. I have discovered that paraffine is not only as devoid of unpleasant odor as the substances last named, but that it is ignited by the phosphorus as readily as sulphur, and when properly applied never fails to set fire to the wood. It is also well known that the quality of matches is much improved by an external varnish to protect the incendiary composition from the action of moisture, which

in damp weather often renders matches not thus coated liable to miss fire; but the high cost of the varnishes in common use has prevented their employment in the cheaper styles of matches. I find, however, that paraffine, when used either alone or in combination with a suitable resin, will have the good effect of the varnishes heretofore used without any material increase of the cost of the match.

To manufacture matches in the manner proposed by my invention it is only necessary to prepare the splints in the usual manner well known to all skilled in the art, and then, having previously melted the paraffine in a shallow dish, to immerse their ends therein. After they have had time to cool they may be tipped in the usual manner with any of the various compositions in use. They are then dipped a second time in the melted paraffine, which may be hardened by the admixture of a twelfth part of common resin. Another method which I have tried is to dip the splints first of all in the incendiary composition, and afterward coat them with the paraffine. Matches prepared in this way, however, ignite with less certainty.

The advantages secured by my invention are obvious. By means of it a match entirely devoid of unpleasant odor, igniting more freely than any match in use, and water-proof, is obtained at a cost less than that of the common sulphur match. The crude paraffine is entirely suitable for this use, and this is abundantly obtained from the coal-oils.

What I claim as my invention, and desire to secure by Letters Patent, is—

The use of paraffine in the manufacture of matches, in the manner and for the purposes herein described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHAS. W. SMITH.

Witnesses:

G. H. BABCOCK,
T. CREGIN.