# UNITED STATES PATENT OFFICE.

GEORGE B. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN WOODEN SHINGLES MADE FIRE-PROOF.

Specification forming part of Letters Patent No. **199,001**, dated January 8, 1878; application filed March 20, 1877.

*To all whom it may concern:*

Be it known that I, GEORGE B. SMITH, of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Wooden Shingles, which is fully set forth in the following specification:

The object of my invention is to preserve shingles, posts, and other light lumber from comparatively early decay, and at the same time to render them non-inflammable or proof against catching fire from sparks or burning cinders.

In one method of carrying out my said invention, I place in proximity two vats or tanks of any suitable dimensions. Into one of these I put one hundred gallons of water, five pounds of sulphate of zinc, ten pounds of sulphate of iron, and sixty pounds of commercial alum, or in like proportion, according to the capacity of the tank. I then place therein the shingles to be treated, and, in any convenient manner, bring the temperature of the solution to about the boiling-point thereof, and keep the same at that temperature for a period of forty-eight hours, or thereabout. After the saturation of the shingles is complete, I transfer the solution to the adjacent tank, and proceed as before, and so on in rotation.

The method of heating the solution which I have employed, and have found the best, is to inject live steam directly into the tank through two or more pipes opening into the latter near the bottom and at each end.

I do not confine myself to the precise ingredients hereinbefore specified, as the desired effect may be attained, in a greater or less degree, if equivalent chemicals be substituted. For example, the chloride of zinc, although not so cheap or efficient as the sulphate, may be employed in lieu of the latter.

A great improvement in the quality of shingles, &c., is effected by my said invention. In the first place they are, after having been subjected to the treatment hereinbefore described, comparatively proof against the usual decay, owing to the fibers of the wood being covered by the alum and its cells impregnated with the salts, especially the zinc and the iron sulphates, which combine with the albumen of the wood, thereby preventing its decomposition. An ordinary pine or hemlock shingle thus treated will last several times longer than an untreated shingle, and may, with great economy, replace the expensive cedar shingle which is in general use where long durability is required. Secondly, such a shingle is at the same time made absolutely spark-proof, and will not catch fire from matches or from live coals or burning cinders. I find, also, that it becomes materially hardened, and thus less liable to wear out by the mechanical action of the elements.

The cost of preparing shingles after the manner I have above set forth is also trifling, the process and the ingredients employed being singularly inexpensive.

I claim as my invention—

As a new article of manufacture and sale, a wooden shingle impregnated with a combined preservative and non-inflammative compound.

GEORGE B. SMITH.

Witnesses:

GEORGE D. LANG,

JOHN STABLER.