

UNITED STATES PATENT OFFICE.

WM. H. CHAPPELL, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN WOODEN PAVEMENTS.

Specification forming part of Letters Patent No. 42,347, dated April 19, 1864.

To all whom it may concern:

Be it known that I, WILLIAM H. CHAPPELL, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented and discovered a new and useful Improvement in the mode of constructing wooden pavements by means of preservative materials to be used in the construction thereof; and I hereby declare the following to be a full, clear, and accurate statement of the same.

I wish the public to understand that I am not the inventor of wooden pavements constructed of blocks set endwise to the grain or the application of gas-tar to the construction thereof. That process has been effectually tried and abandoned in consequence of the rapid decay and wear.

Wooden pavements have been constructed on the continent of Europe and the United States by laying wood blocks endwise of the grain in parallel rows, with openings or channels between, into which gravel and gas-tar are placed; but, on account of the rapid decay and constant repair necessary to keep them in order, I have been induced to adopt the following method of constructing a wooden pavement, which meets my most sanguine expectations in every respect.

The nature of my improvement consists in using wooden blocks sawed about three inches thick, six inches long, and from ten to twelve inches wide, saturated with carbolic acid and cresylic acid, contained in oil distilled from coal-tar at a temperature between 350° and 450° Fahrenheit; or, instead of saturating the blocks as described, I saturate them with a diluted solution of sulphate of iron containing one pound anhydrous sulphate of iron to every six gallons. When the cells are filled I immerse them in a solution of soluble glass containing four ounces anhydrous silicate of soda to the gallon. These liquids decompose each other, and the pores of the wood are closed by a metallic silicate, which effectually prevents decay.

The blocks saturated with the organic acids above described, or steeped successively in the sulphate of iron and solution of soluble glass, are set endwise of the grain on inch boards laid on sand, which boards are first saturated with the iron solution and subsequently immersed in the solution of soluble glass, as described above, and are afterward coated with a pitch mastic, made by heating the "sludge" produced by treating the distillate of coal or

well oils with concentrated sulphuric acid (to remove the highly colored and odorous constituents of the same) until the sludge thickens, forming an asphaltic compound, which is then separated from the acid solution and mixed while hot with gas-tar pitch and the heavy or dead oil distilled therefrom in the proportions as follows, viz: two-thirds pitchy residua from oil treatment, one-third gas-tar pitch, and one-third dead-oil. The saturated blocks are arranged in parallel rows, set endwise of the grain on the prepared boards across the highway, said rows being one inch apart and fastened by strips of inch lumber two and one-half inches in width prepared in a similar manner to the boards. These strips thus form a channel or groove between the blocks one inch in width and four and one-half inches in depth. Into this groove the heated pitchy mastic is poured in a quantity sufficient to close the interstices between the blocks and inch strips, and leaving a channel on top of strips, into which a cement is well rammed, prepared as follows: Coarse sand, gravel, and residium (from the manufacture of sulphuric acid from bisulphuret of iron) are mixed with sufficient water to moisten thoroughly. Then hydrate of lime, about one-sixth the mass, is mixed, and a sufficient quantity soluble glass is added, so as to aggregate the mass in the course of a few hours into an artificial stone impervious to moisture. The surface of the pavement is then coated with the pitchy mastic above described, and while hot fine gravel and sand is strewn thereon, thus forming a solid and durable pavement. Therefore

What I claim as my invention, and wish to secure by Letters Patent of the United States, is—

The construction of wooden pavements with lumber which has been saturated with carbolic and cresylic acids or sulphate of iron and soluble glass, coated with pitchy mastic from well-oil residium, heavy oil and pitch from gas-tar, and laid with cement made from sand, gravel, lime, pyrites residua, and soluble glass, covered with pitchy mastic, substantially in the manner as described in the specification.

In testimony whereof I have hereunto set my hand this 13th day of November, 1863.

WILLIAM H. CHAPPELL.

Witnesses:

C. F. COONCE,
HUGH L. WHITE.