

UNITED STATES PATENT OFFICE.

CYRUS M. WARREN, OF BROOKLINE, MASSACHUSETTS.

IMPROVEMENT IN ROOFING MATERIAL.

Specification forming part of Letters Patent No. **179,829**, dated July 11, 1876; application filed January 11, 1876.

To all whom it may concern:

Be it known that I, CYRUS M. WARREN, of Brookline, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Roofing Material, which invention is fully set forth in the following specification:

This invention consists in a roofing material composed of rosin (or pitch containing rosin) and the residuum of petroleum or candle-tar; also, in a roofing material composed of felt or paper saturated or coated, or both, with a compound made of rosin or pitch (or pitch containing rosin) and the residuum of petroleum or candle-tar.

In preparing a roofing material, great care must be taken to select materials which will not be changed by the influence or the changes of the atmosphere, which will not melt or run by the action of the sun's rays, but which can be readily melted by artificial heat, and spread on the roof or used for saturating or coating paper or felt.

The roofing materials most commonly used, such as coal-tar pitch or coal-tar, are largely composed of volatile matters, and if the same are spread on a roof and exposed for a certain time to the influence of the atmosphere the volatile matters evaporate, the roofing material becomes brittle and full of cracks, and the roof is spoiled; or if such roofing materials are applied to paper or felt, this paper or felt, when spread on a roof, becomes brittle as soon as the volatile matters have evaporated, and the consequence may be a leaky roof. On the other hand, rosin, and also the heavy oil and tarry residuum of petroleum and candle-tar, are free from volatile matters, and consequently a roofing material prepared from these substances will, when spread on a roof, remain in an elastic condition, and paper or felt saturated or coated with this compound will not lose its flexible condition by the influence of the atmosphere.

In carrying out my invention, I take common rosin, or pitch containing rosin, (prefera-

bly the former, as being more free from volatile matter,) and fuse with a suitable proportion of the heavy oil or tarry residuum of petroleum or candle-tar, either or both, to produce a cement of about the consistency of ordinary coal-tar roofing-pitch. When cold, this cement forms a hard mass, which can be put up in barrels for convenient transportation. It is used in the manufacture of roofs in the same manner that coal-tar pitch is now applied. This compound is also used for saturating or coating paper or felt, and in this case it is made of the consistency about like coal-tar.

The process of saturating or coating is conducted in the same manner and with the same apparatus now employed in saturating with coal-tar.

Paper or felt saturated or coated with this compound remains soft and pliable, and, since neither of the ingredients contains any volatile matter, the cement, when spread on a roof, retains its elasticity, and is not liable to crack, so that durable roofs can be produced at a comparatively small cost.

If desired, a portion of the rosin in this compound may be replaced by an equivalent portion of native bitumen or asphaltum.

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

1. A roofing material composed of rosin (or pitch containing rosin) and the heavy oil or residuum of petroleum or candle-tar, mixed together, substantially as specified.

2. A roofing material made of paper or felt saturated or coated, or both, with a compound made of rosin (or pitch containing rosin) and the heavy oil or residuum of petroleum or candle-tar, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 7th day of January, 1876.

CYRUS M. WARREN. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.