

No. 746,411.

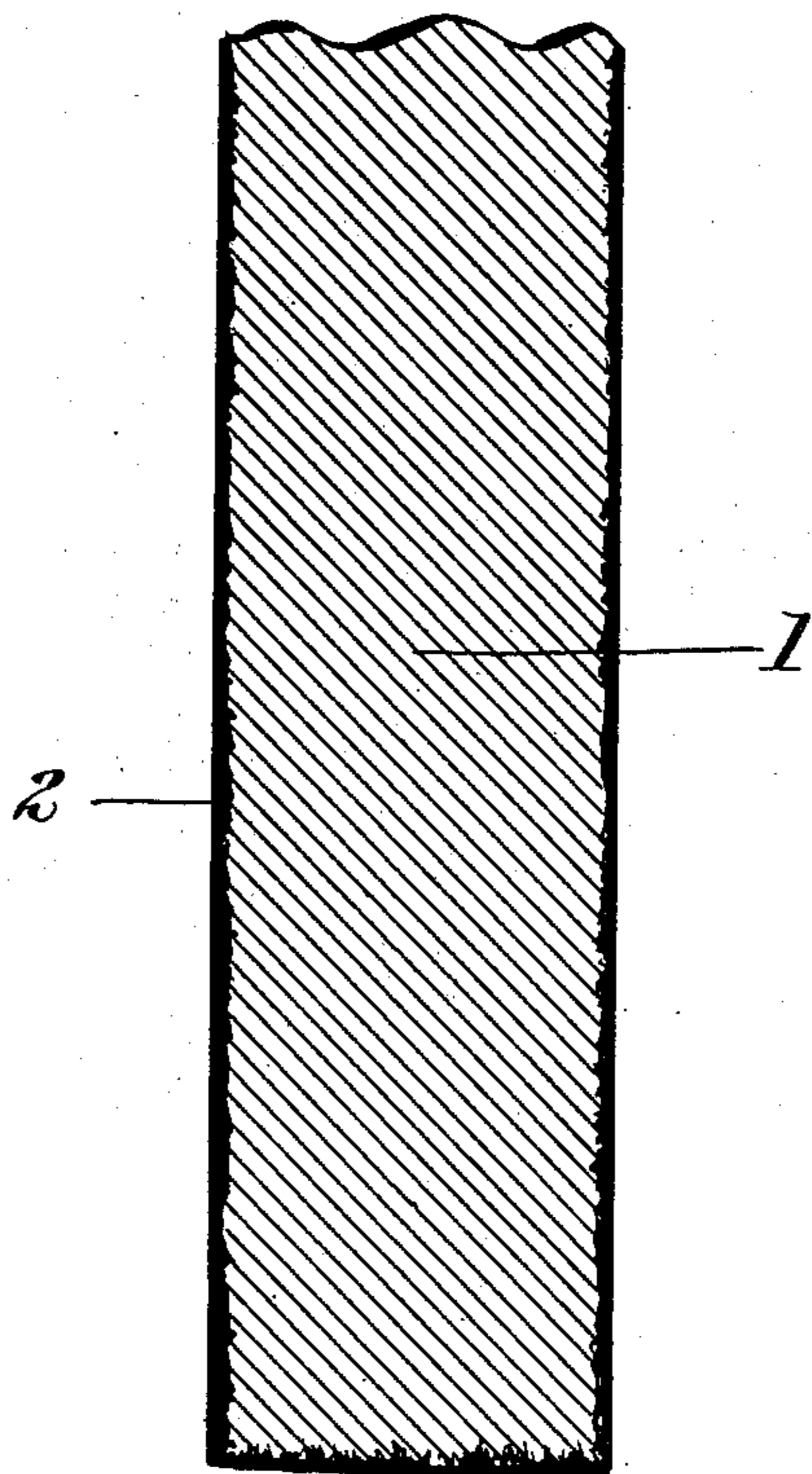
PATENTED DEC. 8, 1903.

O. A. TURNER.

STRUCTURAL ELEMENT AND METHOD OF PRODUCING SAME.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

ORRA A. TURNER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO WOOD AND IRON PRESERVING COMPANY, A CORPORATION OF CALIFORNIA.

STRUCTURAL ELEMENT AND METHOD OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 746,411, dated December 8, 1903.

Application filed February 24, 1903. Serial No. 144,880. (No model.)

To all whom it may concern:

Be it known that I, ORRA A. TURNER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Structural Elements, of which the following is a specification.

An object of this invention is to provide superior structural elements—such as piles, posts, bridge-timbers, telegraph-poles, ship and mining timbers, and the like—which are capable of resisting the action of the elements and animal, vegetable, and insect life, and especially the destructive action of the teredo and other forms of ocean life, to which piles and structures used in the ocean are subject.

This invention includes the combination, with a permeable object, of a newly-discovered composition of matter which is capable of preserving and protecting wooden structures and which will also adhere with great tenacity to iron and other metals forming a protection for the same and which is tough and strong and not easily affected by ordinary temperatures.

I have discovered that a pile which is proof against attacks of and injury from the teredo or other aquatic life which is liable to injure piles may be produced by admixing a tempering substance—such, for instance, as hydraulic cement—with a gum—such, for instance, as asphalt—and combining the same with the surface of a solid pile-body. The coating admixture or composition thus produced and applied will tightly adhere to the wooden or other pile-body, and the pile thus made will consist of a body and a tough, pliable, homogeneous, and measurably elastic coating, whereon upon immersion in water a hard outer surface will form, so that the pile then comprises a body and a coating admixture composed of a tough pliable inner portion and a hardened surface. I have found that in case a portion of the hardened surface of such homogeneous coating be removed the action of the water will cause a new hardened surface to form on any of the pliable portion exposed to the water, thus maintaining the integrity of the pile and its ability to resist the action of the teredo or

other sea life, and at the same time the pile is proof against the injurious and deteriorating action of any water and air coming into contact with the surface of the coating.

The composition which forms a part of said element, as I have used it, consists of a base composed of a hydrocarbon, a tempering substance, and particles of hard material. The materials which I have used successfully on a timber subsequently immersed in the ocean-water infested by the teredo and kept submerged for a period of four years without injury or deterioration and without absorbing moisture are as follows: asphaltum, hydraulic cement, and a substance known as "black sand," the same being a form of magnetic iron.

It is possible that other hydrocarbon gum or other substances of gummy nature may serve the purpose as well when tempered with a substance corresponding to the hydraulic cement; but I believe asphaltum and hydraulic cement to be preferable. It is possible that ordinary sharp sand would serve the purpose as well as the black sand; but I believe the black sand to be preferable to ordinary sand. I do not limit my invention, however, to the exact constituents stated, the principle being to provide some suitable gum, as the hydrocarbon named, and a tempering material, as the hydraulic cement, and desirably particles of hard material, such as the black sand or any equivalents therefor. It is possible that naphtha or coal-tar will be full equivalents for the asphaltic base, and I do not limit myself specifically, the broad principle of this invention being that the composition must be formed of materials which resist the action of the water, and one of said materials being capable of forming a solid body at ordinary temperatures and a fluid body at high temperatures. The asphaltum, hydraulic cement, and black sand are deemed by me preferable as compared with other substances which may be regarded as their equivalents.

My invention may be understood by referring to the accompanying drawing, in which I have shown an element as a pile comprising a core and a jacket composed of an incorporated or blended admixture of asphalt and

cement forming a teredo-proof external skin.

1 is a wooden part, and 2 an external jacket or skin of the named composition, which in practical use is so coherent that its several constituents cannot be distinguished by the eye.

In carrying out my invention a portion of asphaltum or its equivalent may be melted in a suitable receptacle, (not shown,) and then a portion of the hydraulic cement powder or other tempering material will be added, the whole mass being agitated so as to keep the material consistent and well mixed and preventing the solids from settling to the bottom of the mass. While thus agitating the fluid, the wooden, metal, or other part of the proposed structural element may be inserted to coat the whole thereof or such portion as may be desired.

The wooden or metal part or the portion thereof to be coated may be allowed to remain in the mass for a few minutes to allow the hot liquid to adhere thereto or to penetrate in case of wood or other porous or permeable material, then the element will be withdrawn into the open air and allowed to cool sufficiently to solidify the adhering composition, then the coated portion may again be immersed in the composition and again withdrawn, and such immersion and withdrawal for successive coatings may be repeated as often as desired until a coat of a required thickness has been applied to form the element. The sand or other particles of hard material may be applied to the hot adhering composition of asphalt and hydraulic cement after the element has been withdrawn from its bath in the molten composition and should be well incorporated with the body of such adhering composition. If more than one coating of the composition is applied, the sand or other hard particles may be applied on each coating of the composition.

One immersion may be found sufficient for protection of piles against the attack of the teredo. The element which I submerged in the ocean privately for the purpose of complete test remained therein, as above stated, for a period of four years without injury, and the outside of the coating became incrustated with shells of teredos, barnacles, and other mollusks.

It may be possible also to apply the mixture while hot to the bottom of ships, boats, and also to other structures to serve as a paint.

I have used the materials in the following

proportions, by bulk: about one part cement, three parts of sand, and about four parts of asphalt. I have melted the asphalt and then admixed the cement and sand with the asphalt, so as to incorporate and blend the same with the melted asphalt, and coated a wooden body therewith, thereby forming on the body a tough hard external skin or jacket capable of protecting said body from the action of water and from the attacks of the teredo and other forms of marine life. The element thus formed was capable of being driven as a pile without injury to said protecting-skin.

The cement I have used is that commercially known as "Portland" cement.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The element set forth consisting of wood and the pliable, homogeneous, measurably elastic composition of matter substantially as set forth.

2. The element set forth, consisting of a body and a coating of pliable, homogeneous, measurably elastic composition.

3. An element consisting of a body and an external jacket or skin composed of an incorporated or blended mixture of a gum and a tempering substance.

4. An element comprising a body or core and an external jacket or skin composed of an incorporated or blended mixture of asphalt and cement.

5. An element comprising a body or core and an external jacket or skin composed of an incorporated or blended mixture of asphalt, cement and sand.

6. A pile consisting of a core and a tough hard external skin comprising an incorporated or blended mixture of asphalt and cement.

7. A structural element comprising a core or body and a homogeneous jacket therefor having a yielding inner portion and a hard skin or outer portion.

8. An element comprising a body and an external jacket or skin composed of an incorporated or blended mixture of gum, tempering substance and sand.

In testimony whereof I have hereunto set my hand, this 14th day of February, A. D. 1903, in the city of Los Angeles, county of Los Angeles, and State of California.

ORRA A. TURNER.

In presence of—

JAMES R. TOWNSEND,
FREDERICK D. LYON.

Corrections in Letters Patent No. 746,411.

It is hereby certified that in Letters Patent No. 746,411, granted December 8, 1903, upon the application of Orra A. Turner, of Los Angeles, Cal., the title of the invention was erroneously written and printed "Structural Elements and Method of Producing Same," whereas the said title should have been written and printed *Structural Elements*, and in the printed specification, page 1, line 83, the word "naphtha" should read *maltha*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2d day of February, A. D., 1904.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.