

UNITED STATES PATENT OFFICE.

ANTON L. V. NILSSON, OF TULAROSA, NEW MEXICO.

PLASTIC COMPOSITION.

1,344,058.

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No Drawing.

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To all whom it may concern:

Be it known that I, ANTON L. V. NILSSON, a citizen of the United States, residing at Tularosa, in the county of Otero and State of New Mexico, have invented certain new and useful Improvements in Plastic Compositions; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to plastic compositions, and it relates more particularly to an improved plastic building element and the process of making the same.

One of the objects of this invention is to provide an improved composition which is suitable and highly valuable for the making of building elements such as, bricks, blocks, posts, shingles, chimney tops, door frames, window frames, partition walls, and bars such as sills, caps and railroad ties, etc.

Another object is to provide an improved building element of this character which can be produced and transported at a very slight cost.

Another object is to provide an improved building element which will permit nails and screws to be driven thereinto without causing the element to crack or break, and which will tightly hold the nails or other fastening means, thus being a competent substitute for wood;

Another object is to provide an improved composition or building element which is thoroughly fireproof and water-proof;

Another object is to provide an improved building element which is very light in comparison to other plastic materials,

Another object is to provide an improved building element which is very strong and durable;

Another object is to provide an improved building element of this character which has a beautiful glossy surface;

Another object is to provide an improved plastic material which sets or solidifies very quickly and easily throughout, so as to form a building element which is free from cracks and distortions;

Another object is to provide an improved building element, the making of which is very simple and easy and the process requires no highly expensive material and can be carried out by any person of ordinary ability.

Other objects and advantages may become apparent to persons who read the following details of description and the appended claims.

My composition may consist of the following ingredients which are combined in the following proportions by volume:

Volcanic ash (calcined)-----	70 parts,	65
Volcanic lava (crushed and screened)-----	12 parts,	
Portland cement-----	7 parts,	
Pulverized alum-----	0 $\frac{1}{2}$	
Alfalfa meal-----	0 $\frac{1}{2}$	70
Finely divided wood (shavings or saw dust)-----	10 parts	
	100 parts.	

I may also use tallow and kerosene in the proportion of one pound of tallow to one gallon of kerosene, and this separate mixture is used for coating the inner surface of a mold in which the building blocks or other elements are to be molded from the composition first above tabulated.

The process of forming the building elements, when all the above ingredients are used, is as follows:

I first crush the lava or rock which has been formed by volcanic action, and screen the crushed rock through a screen having openings ranging from 1/20th to 1/8th inch; I then mix the volcanic ash crushed and screened rock, Portland cement, alum and finely divided wood while these elements are dry; I next mix this product with a sufficient quantity of water to form a semi-liquid substance about the consistency of thick cream; in addition to the foregoing mixture, I add the alfalfa meal, as a retarder, to retard the drying of the composition, only in case the building element is to be used for interior structure; this semi-liquid substance is now poured into a mold which has been preferably treated with a mixture of tallow and kerosene; and the whole mass is now subjected to heat sufficient to melt or liquefy the film of tallow and kerosene, while the poured mixture is setting or solidifying. As the poured mass becomes solid, the liquefied film penetrates the outer surface thereof and adheres to the particles which compose the outer surface, and also fills the interstices between the particles at and adjacent to the outer surface.

In the combination of the ingredients first tabulated, the volcanic ash and water form a cementitious substance which unites with the crushed rock or finely divided wood or both to form a solid mass or monolith. The Portland cement merely assists the volcanic ash in binding the rock and wood, and rendering the mass more compact and more nearly water-proof by filling the small interstices between the particles of wood, rock and ash; and the wood renders the formation produced comparatively light and penetrable by nails etc.; the alum facilitates the quick setting and hardening of the building element; and the fatty material composed of the tallow and kerosene not only renders the building element water-proof, but provides a beautiful glossy surface or outer facing of the building element.

The volcanic ash which forms approximately 70 per cent. of this composition or building element, is found in enormous quantities in portions of New Mexico, and experience has proven that this substance is very highly efficient as an element of the composition contemplated in this invention; also that this volcanic ash is obtainable from the earth's surface without the necessity of mining tools or other equipment; and that it is comparatively light. Therefore, the plastic material which comprises this natural deposit is capable of being manufactured at a very low cost. Moreover, the addition of wood renders the finished substance very light in comparison with other plastic substances, and nails and other fastening means readily penetrate this building element without cracking or otherwise injuring the same.

The volcanic lava is also found in large quantities adjacent or contiguous to the deposit of volcanic ash; and it has been found by analysis that this rock contains iron, silica and aluminum; also that this volcanic lava readily combines with the other ingredients named, giving the blocks a degree of hardness commensurate with the proportion of lava employed in the mixture. Before mixing the volcanic ash with the other ingredients, the said volcanic ash should be calcined to just the proper degree for giving the best results, according to whether it is desirable to have the mixture set quickly or somewhat slowly.

It is not always essential that all of the above named ingredients be used in order to obtain a useful composition or monolith, for the calcined volcanic ash has sufficient binding and setting qualities to combine with alum, crushed rock, water and fatty material independently of the Portland cement or other binding material.

One very important feature of this process is the fact that it is carried on to the best advantage in the sunshine, that is, in

the heat of the sun, in contradistinction to other processes which require that the building elements be kept in the shade and repeatedly moistened during the curing process. This feature dispenses with the use of buildings or other means for sheltering the building elements, and also enables the process to be carried out to the best advantage in a region where sunshine and volcanic ash and volcanic lava are exceedingly bountiful. The portion of New Mexico above referred to, viz. the region adjacent to Tularosa, New Mexico, is such a region, and therefore, these building elements may be produced at the minimum cost.

The building element produced by combining the ingredients named in the stated proportions is very strong and tenacious, and will stand a crushing pressure of approximately 7,000 pounds per cubic inch.

In the manufacture of beams, posts, poles, sills, bars, railroad ties, door and window frames, caps, etc., any suitable reinforcing elements may be combined with this plastic material.

Although I have stated certain proportions in which the ingredients may be combined, it is to be understood that my invention is not limited to these exact proportions. It is also to be understood that when the process is employed for the formation of shingles and other thin members or elements, the fatty substance may penetrate the entire body from surface to center, and therefore, the said fatty substance (which may be tallow and kerosene), may properly be considered an element or elements of this composition.

What I claim as my invention is:

1. The plastic composition which comprises calcined volcanic ash, crushed rock, water, alum and fatty material.
2. The plastic composition which comprises calcined volcanic ash, Portland cement, water, alum and fatty material.
3. The plastic composition which comprises calcined volcanic ash, crushed volcanic lava, Portland cement, water, and retarding material.
4. The plastic composition which comprises calcined volcanic ash, crushed rock, water and finely divided wood.
5. The plastic composition which comprises calcined volcanic ash, crushed rock, finely divided wood, water, fatty material, kerosene, and alum.
6. The plastic composition which comprises calcined volcanic ash, crushed volcanic lava, Portland cement, alum, water, retarding material, tallow and oil.

In testimony whereof I have hereunto set my hand.

ANTON L. V. NILSSON.