

# UNITED STATES PATENT OFFICE.

HIRAM TUCKER, OF CAMBRIDGEPORT, MASSACHUSETTS, ASSIGNOR TO H. TUCKER AND JOS. STORY.

## IMPROVEMENT IN APPLYING COLORS TO STONE.

Specification forming part of Letters Patent No. **10,561**, dated February 21, 1854.

*To all whom it may concern:*

Be it known that I, HIRAM TUCKER, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented a new and useful improvement in coloring stone, or various other substances, in imitation of marble or other veined or variegated material; and I do hereby declare that the same is fully described in the following specification.

My invention is based on a very important discovery which I have made in the art of applying colors to surfaces by means of a bath of water or other proper liquid.

In the common process of "marbling," as it is termed by the manufacturers of marbled paper, a size bath is employed, and the colors or pigments are mixed with water, which admits of their being floated on the surface of the bath when thrown in the same. The object of using mucilage or matter of such kind soluble in water is not only to hold up the colors but to enable them to be applied to paper and to shortly dry them, the surface of paper to receive the color being laid on the colors while they are floating on the bath.

Attempts to employ colors mixed with oil have been attended with certain difficulties. In the first place, the oil by its very fluent properties will cause the colors to run together or stand in drops, or so combine when on the surface of the liquid as to spoil the effect desired. In the second place, should this not take place in the bath it will be very likely to occur after the application of the colors to the paper, and before they can become dry. In the third place, the oil of itself is not sufficiently siccative even when boiled. These practical difficulties, as well as others which might be stated, and which are known to persons skilled in the art of marbling, have prevented the employment of drying-oils as vehicles for colors in the process of coloring by the bath. Besides this, they have prevented the use of water alone in the bath, the liquid generally used being a strong solution of gum-tragacanth, or a strong size, made of parchment clippings. Most oils are so fluent that a single drop or "goutte" of a tenth of an inch in diameter would readily and almost immediately flow over a surface of one or two feet in diameter. In fact,

but a very short period of time is required to flow over the whole surface of the bath, and should there be any colors on it they will all be driven in a body before it.

It is sometimes customary, particularly in what is termed "shell-marbling," by means of a size bath, to put into a pint of the mixture of water and color a drop or two of some drying-oil. This minute quantity of oil, when the color is spattered on the surface of the bath, will prevent it, in a great measure, from combining with or laying on the other colors, and will separate or drive them before it, so as to produce the "shell" appearance known to workmen.

By my improvement I use a water bath instead of a size bath. The fluid or some other property of linseed or drying oil prevents it from being used alone as a vehicle for the pigments when employed in the marbling process. In coloring the surfaces of objects made of slate, iron, papier-maché, or various other materials it becomes desirable to use oil-colors, owing to the great facility with which they may be worked or controlled in attempts to produce with them perfect resemblances of whatever we may desire to imitate. I have therefore sought for some substance which, when combined with the linseed or drying oil, would sufficiently overcome the fluent property of it, or so change it as to enable the colors mixed with the oil and such substance to remain broken up and not combine together, after being broken up, on the surface of the water bath, or with colors thrown on or between them when on said surface. In my researches I have made the discovery that the gum-rosin from the *Dammara australis* or *Pinus kauri*, and which in commerce is known by the names of "kauri" or "cowdee," "dammar" or "dammara," when mixed with a suitable vehicle—such as the essential oil of turpentine, for instance—will combine with a drying-oil and impart to it not only that property so desirable for the marbling process, but it will give to the oil a body and siccative properties of great advantage to the oil-colors applied by such means.

The solution of the resinous gum and the essential oil may be from two to three pounds of the gum to a gallon of the essential oil, al-



though I do not confine myself to such proportions, as I find the varnish made from the cowdee will serve a very good purpose.

To a quart of the drying-oil I usually put about two quarts of the cowdee solution or varnish (not, however, confining myself to such proportions, as the graining-colors will often require and work well with a very much less proportion of the kauri or dammar varnish) and add the mixture or any suitable part thereof to several vessels containing the various colors to be used, and to the consistence that may be desirable. With these colors so prepared I first throw or lay on the surface of the water in the bath a small quantity of what may be termed the "ground-color," and I suffer it to spread over the surface of the bath. This will take place in about one-half a minute, and the color will gradually dry or set, so that if a stick is run through it so as to break it up it will not combine or run together again as drops of oil or water do when brought in contact. Into the mass of color thus broken up I throw or spread or interlay the veining or other colors, and this may be effected by dipping the breaking-up stick or article used into the veining-color and moving it and the veining-color on it around in the thin stratum of ground color, so as not only to break up or separate in pieces or parts the stratum of ground-color, but at the same time lay the veining-color between such pieces or portions, so as to case it to embrace and separate them somewhat as vein-colors in marble do other colors thereof. Next, by means of a stick or thin spatula or blade dipped into the water I float all the masses of veining and ground colors up together, so as to bring those of the veining and ground colors in contact to the extent that may be desired to form the figure. On completion of this the piece of stone or the article to be marbled or colored is to have that surface of it to which the colors are to be applied laid on the colors floating on the bath and immediately removed from the bath, the colors by such operation being made to leave

the water and adhere to the dipped surface of the article. When they are dried thereon, which shortly takes place, they may be rubbed or ground down and polished, the figure made by their combination having to a wonderful extent the natural appearance of the marble, or such veined or variegated stone which it may be intended to imitate. Neither the kauri or dammar varnish nor the linseed or drying oil can be used alone and produce the effects that result from their combination and employment, as stated.

I do not claim the common process of applying water-colors to paper by the use of a bath of size and mixing such colors in water. Nor do I claim the union of linseed-oil and varnish made from kauri in its use in connection with a pigment, and in the common process of painting or spreading colors on a surface by means of a brush, my invention having special reference to the application of colors to a surface by means of a liquid or water bath. Nor do I claim therein the use of either kauri or oil alone.

What I claim is—

My improvement in the process of marbling, whereby an oil-color (or pigment mixed with a drying-oil) when applied to or spread on the surface of a bath of water or other suitable liquid shall have imparted to it the property above mentioned, such improvement consisting in employing in such process the gum-kauri (or a like substance) combined, as specified, with the drying-oil, the same enabling a person, by means of a bath, to apply to a surface of stone or other material oil-colors so as to present the natural effects or appearance of any polished stone it may be desired to imitate.

In testimony whereof I have hereunto set my signature this 8th day of February, A. D. 1854.

HIRAM TUCKER.

Witnesses:

JOHN L. SMITH,  
E. G. HANDY.