

UNITED STATES PATENT OFFICE.

GUSTAVUS A. FUDICKAR, OF CINCINNATI, OHIO.

SUBSTITUTE FOR HARD RUBBER.

SPECIFICATION forming part of Letters Patent No. 226,844, dated April 27, 1880.

Application filed December 9, 1879.

To all whom it may concern:

Be it known that I, GUSTAVUS A. FUDICKAR, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Substitute for Hard Rubber; and I do hereby declare the following to be a full, clear, concise, and exact description of the same, sufficient to enable those skilled in the art to which my invention belongs to make and use it.

It is well known that ebony (*Diospyros ebenus* or *Byra ebenus*) is a wood of fine close fiber; but, as it is devoid of resinous gum, the fibers are not cemented together, and hence its natural density is insufficient to prevent it from cracking or splitting when applied to purposes where it is subject to strains or unequal pressure. For this reason its use is confined mostly to cabinet-work and the fine arts in such position as to be free from strains, although its color and capacity for receiving fine polish are qualities which render its use very desirable in other manufactures.

I have discovered that by filling the tissues of this wood with resinous gum the fibers are so cemented together as to form a dense, tough, and elastic mass, overcoming the natural brittleness of the wood and its liability to shrinkage, and thereby adapting it for uses to which it has been heretofore inapplicable, and for which hard rubber has generally been employed. Thus treated it forms an excellent substitute for hard rubber for most uses, besides being much cheaper and less liable to be influenced by extreme changes of temperature.

As it is practically impossible to inject resinous gum, as such, into the tissues of the wood, I treat it with such oils as will enter its pores and become oxidized therein, and thereby form a resinous cement to unite the fibers into a compact mass. I prefer to use linseed-oil for the purpose, although cotton-seed, rapeseed, and other oils that will absorb oxygen from the air and become converted into a resinous gum may be employed.

In treating the wood the oil is placed in a

suitable vessel containing the wood, and then gradually heated somewhat above the boiling-point, and this heat continued for an hour, more or less, according to the size of the wooden mass, until its tissues are thoroughly filled. The wood is then removed from the oil and allowed to dry either by exposure to the atmosphere or by being placed in a suitable drying-chamber or kiln. It is preferable to place the wood in the oil and then heat both together to the requisite temperature, in order to prevent the wood from cracking, as it would be very liable to do if at once immersed in the highly-heated oil.

Although the wood in the form of blocks may be treated with oil, it is perhaps more desirable to first shape it into the article of use before being boiled, as this effects a saving of material and avoids loss in case the article when shaped should be too defective to be impregnated with oil.

When the articles or material thus treated have become thoroughly dried they will be found to be tough and flexible to a certain degree capable of resisting moisture, and of a color and surface very closely resembling hard rubber.

I design to use the wood thus treated in the manufacture of syringe-nozzles, joints, and other syringe attachments, for the cases of receiving-instruments in telephonic apparatus, and for many other purposes to which hard rubber is now applied.

Having thus described my invention, what I claim is—

As a new manufacture, ebony-wood saturated with oil under gradually augmenting temperature, so as to render it flexible, substantially as described.

In testimony of which invention I hereunto set my hand this 6th day of December, A. D. 1879.

GUSTAVUS A. FUDICKAR.

Witnesses:

EDWARD H. BAKER,
N. K. ELLSWORTH.